AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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THE BARNYARD.—*Drawn and Engraved for the American Agriculturist.*

The barnyard may be taken as the index of the character of the farmer. As is the barnyard, so is the farm and the farmer. It is well that all of us should remember that in this case it is no figure of speech to say that "straws show which way the wind blows." The arrangement of the barnyard is not for show altogether. The profits of the farm depend to a great extent upon it. It is in the yard and the barns that the produce of the farm that is not sold outright is converted into beef, pork, mutton, wool, or milk and butter, articles that may be more profitably sold. It is in the yard also that the manure is made and kept. The barn and barnyard are the manufactory of the farm, and if they are not arranged with a view to economy, a large waste results that reduces the farmer's profit. There are many thousands of such barnyards as that shown in the above engraving. The majority of farmers in this country from necessity begin business with small means, and do the best they can with the materials they possess.

The excellence of farm buildings does not consist so much in the materials of which they are built, as in the use made of those materials. Useful buildings may be made of logs or prairie sods, or poles and coarse hay, and these, by skillful arrangement, may be made to serve as useful a purpose as dressed lumber and paint, or pressed bricks. The main points are warmth, dryness, and ventilation; for food is wasted when an animal shivers in its stable, or when its health is injured by damp, filth, or bad air. The owner of the barnyard here illustrated has made good use of poor materials, and his barn has what many more pretentious ones have not, a wind-break to the stable door. A farmer who is thoughtful about such small things as this, (although this is more important than it appears,) may be taken to be a careful, thrifty man, who, by and by, will be able to build a barn with all the modern improvements, and to build it properly, too. The old proverb, "take care of the small things, and the large ones will take care of themselves," is applicable to matters about farms, and barnyards especially. When the small things are well watched, large ones are not forgotten.

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A Good Pig.—W. H. Fry, of Ontario, writes: "I bought a pig on the 16th of last March for $3, he being then 2 months old, and the smallest of a litter of thirteen. I killed him Nov. 18, when ten months old. He weighed, dressed, 334 lbs. He was a cross between the Essex and Chester White."—We believe this cross is giving general satisfaction. A large sow, bred to a fine boned, higaly refined, thoroughbred boar, makes a capital cross. It does not matter what breed the sow is, so that she is of good size, strong, healthy, and vigorous.

Calendar for February.

Day of Month.	Day of Week.	Boston, N'Engl'd, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M.
1	M	7 14	5 14	3 46	7 10	5 18	3 40	7 6	5 22	3 33
2	T	7 13	5 15	4 48	7 9	5 19	4 41	7 5	5 23	4 34
3	W	7 11	5 16	5 46	7 7	5 20	5 39	7 4	5 24	5 31
4	T	7 10	5 18	6 33	7 6	5 22	6 27	7 3	5 25	6 20
5	F	7 9	5 19	7 10	7 5	5 23	7 4	7 2	5 26	6 58
6	S	7 8	5 20	sets	7 4	5 24	sets	7 1	5 27	sets
7	S	7 7	5 22	7 5	7 3	5 25	7 7	7 0	5 28	7 9
8	M	7 6	5 23	8 19	7 2	5 26	8 19	6 59	5 29	8 20
9	T	7 5	5 25	9 32	7 1	5 28	9 31	6 58	5 31	9 30
10	W	7 4	5 26	10 45	7 0	5 29	10 42	6 57	5 32	10 40
11	T	7 2	5 27	11 58	6 59	5 30	11 55	6 56	5 33	11 51
12	F	7 1	5 29	morn	6 58	5 31	morn	6 55	5 34	morn
13	S	7 0	5 30	1 15	6 57	5 32	1 11	6 54	5 35	1 5
14	S	6 58	5 31	2 31	6 56	5 33	2 25	6 53	5 36	2 19
15	M	6 57	5 33	3 45	6 54	5 34	3 38	6 52	5 38	3 30
16	T	6 55	5 34	4 48	6 53	5 36	4 41	6 50	5 39	4 33
17	W	6 54	5 35	5 40	6 51	5 37	5 34	6 49	5 40	5 27
18	T	6 52	5 36	6 19	6 50	5 38	6 14	6 48	5 41	6 8
19	F	6 51	5 38	6 52	6 49	5 40	6 48	6 47	5 42	6 43
20	S	6 50	5 39	rises	6 48	5 41	rises	6 46	5 43	rises
21	S	6 48	5 41	7 11	6 46	5 43	7 12	6 44	5 45	7 13
22	M	6 47	5 42	8 14	6 45	5 44	8 14	6 43	5 46	8 13
23	T	6 45	5 43	9 16	6 43	5 45	9 15	6 41	5 47	9 13
24	W	6 44	5 45	10 17	6 42	5 47	10 15	6 40	5 48	10 12
25	T	6 42	5 46	11 21	6 40	5 48	11 17	6 38	5 49	11 13
26	F	6 40	5 47	morn	6 38	5 49	morn	6 37	5 50	morn
27	S	6 38	5 48	0 24	6 37	5 50	0 19	6 35	5 51	0 14
28	S	6 37	5 49	1 30	6 35	5 51	1 24	6 34	5 52	1 17

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	6 3 1 mo.	2 59 ev.	2 47 mo	2 35 mo.	2 5 mo.
1st Quart	13 0 36 mo.	0 24 ev.	0 12 mo	0 12'h	11 40 12'h
Full M'n	20 3 17 mo.	3 5 ev.	2 53 mo	2 41 mo.	2 11 mo.
3d Quart.	28 5 7 mo.	4 55 mo.	4 43 mo	4 31 mo.	4 1 mo.

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The active work of the farm, if it has not already begun, is near at hand; indeed in the Southern States, where the weather is unusually open, winter is scarcely a season of rest, and the planter who has permitted the last month to pass, without procuring materials for compost, without breaking up his land, or who has not hired his hands for the coming season, must now lose no time, if he would not be behindhand. Though in the Northern States the ground is covered with snow, or frozen solidly, there is much preparatory labor to be done, if the farmer would not be driven by his work throughout the whole season. There is much planning and thinking to do, for it no longer pays to farm in a hap-hazard manner, and to secure success, a well-digested method must be adopted and adhered to, in spite of all obstacles. There are still in the newer States some places, in which the soil permits grain-crops to be raised year after year without manure, but even in those localities the experiences of the last two years have taught farmers, that they can not depend on grain alone for profit. The rich farmers are those who raise grass and roots, and produce stock, or butter and cheese, and make enough manure to raise occasional big crops of grain. The poor farmers are those who depend on corn and wheat alone. Even the greedy locusts of the plains spare the grass, and in the devastated districts those who have stock, have little reason to complain. In the South it is very similar. Cotton planters are poor, and find all the money their cotton crop produces, goes to buy food and feed. On the other hand, those who are raising corn and fodder along with their cotton, not only produce their own supplies, and save this outgo, but they make a good deal of manure, and have less of fertilizers to purchase. It is now a seasonable time to think over and discuss this subject.

Hints about Work.

While the northern farmer is carefully husbanding his resources, to support his stock during the long winter, and while his fields are either covered with snow, or bound by frost, the southern farmer is already busy in preparing for his crops. The time is nearly passed, when he can repair his fences, gather manure, hire labor, and clear and break up his new lands. All this ought to have been done already, or must be done forthwith. Early in April planting will commence, and there is but little time now to spare. Contracts should be made with the help at once; the best are always early taken, and the last who hires gets the refuse.

Manure.—This is a chief consideration almost everywhere. The gathering is not the only thing to be studied. To prepare it for use is equally important. Where there is little frost, composts of muck or woods' earth with lime, should be made without delay. Decomposition of the vegetable matter soon takes place, and the result is a very useful fertilizer for corn, grass, or cotton; if cotton-seed, or some stable manure is composted with it, it is so much more valuable. Where the winter is still severe, the manure pile should be turned over at least once, and twice turning will pay, as the manure will decay more rapidly; by mixing the different kinds together, the danger of dry rot, or "fire-fanging," will be avoided. Manure is of little use, until it is decomposed and plant-food developed; and as turning helps to hasten this process, the labor is well spent. What is hauled to the field should be spread as rapidly as possible. The more evenly applied, the better is its effect. If left in heaps, a rain will dissolve the soluble parts, and carry them into the soil, making the place where the pile stood too rich, and robbing the rest of the field, and a portion is worse than wasted.

Buildings and Fences.—Fine weather in this month may be chosen for out-door painting and repairing. The absence of flies and dust, and the slower drying of the paint, will go far to balance the inconvenience of cold fingers. Painting is a job that may be done in mittens. Fences should be made secure, before more pressing work causes this to be forgotten. No smaller nail than a "tenpenny" should be used for a board fence. A few pounds of No. 9 wire are useful in securing the top-rails, or the riders, if cut into lengths of 18 inches, and twisted around them, or the stakes where they cross.

The Workshop.—Abundance of work may be found in repairing baskets, boxes, crates, bags, tools, and implements, and for making new ones for use in the coming season. Every little thing made at home prevents the outlay of money. In the workshop a farmer's boy, when not at school, will find recreation, and occupation that will develop whatever talent he has, and make him "stick to the farm."

Farmers' Clubs may be made of great service, if properly conducted. To the usual discussions at this time should be added, the consideration of plans for making experiments with artificial manures, feeding stuffs, and new seeds, during the coming season, and the work of the next summer should be made the subjects for this winter's discussions. If farmers would read some works on political economy, such as Smith's Wealth of Nations, and Mill's or Carey's Political Economy, they would be better prepared to discuss the subjects of trade, and the laws of supply and demand, a knowledge of which is necessary for every business man. Late experiences go to show that a better knowledge of these subjects, and of human nature generally, would be valuable to those who exert influence through the Clubs and Granges.

Horses need extra care, as the damp, changeable spring-weather approaches. An increase in the feed may be gradually given, and close attention to the health exercised. The majority of the ailments of a horse are due to neglect of some simple needs, and the most prolific cause of these is indigestion, by which all parts of the animal may be seriously affected; the next prolific cause is exposure to damp, cold, and foul air. Sound, nutritious food, given in moderation, and at proper periods, pure water, and pure air, will keep a horse in health and good working condition. Colts need special care now, with kind, friendly management.

Cows that are coming in should be kept quiet, and fed with moderation. If the calf is taken away as soon as dropped, out of sight and hearing, and kept there, it will avoid much uneasiness with nervous cows, and often prevent withholding the milk, and consequent garget. Obstinate cases of

garget may often be cured by injecting a strong solution of bi-carbonate of soda into the teats with a syringe, and milking it out, repeating this several times a day; and bathing the udder with cold water, with a little tincture of arnica in it. If garget is feared, give a pound of Epsom salts at once as a preventive, and milk the teats frequently.

Sheep.—Feed as directed last month, and watch the newly dropped lambs, so that weak ones may be helped to suck. Lambs for early market may be forced by teaching them to suck warm milk from a long-spouted can, with a cloth teat at the end of the spout. They will quickly learn to suck, and relish the milk if new and good. When two or three weeks old, they may be taught to nibble a little fine rye-meal or wheat-shorts. But whatever is given should be little and often.

Maple Sugar.—The maple-sugar crop is a very important one, amounting in value to several million dollars annually. In 1870 there were nearly 30,000,000 pounds of maple sugar, and 1,000,000 gallons of molasses made in the United States. The general quality of the sugar, however, is poor. It is not made with cleanliness or care, and the rough method of tapping the trees with an ax, injures them. The trees should be bored with an auger, not over one inch in diameter, if wooden spouts are used. The best sap-spout is a metal one that needs only a half-inch hole, and has a hook attached to it to hang the pail upon. It is made by C. C. Post, Burlington, Vt. When the sap is gathered free from impurities, and boiled carefully, the value of the sugar is doubled.

Poultry.—Eggs and early chickens may be had now, if the fowls are fed with warm feed, and a warm nesting place is provided. Boiled potatoes, mixed with cracked wheat, given warm, is the best stimulating food. A warm corner of the barn should be provided for a few early brooding hens.

Swine.—Breeding sows should be given a few roots, or extra succulent feed, before farrowing. Young pigs may be forced, as mentioned for lambs; they will learn to drink milk from a shallow pan, if their heads are put down to it a few times. Gentle treatment of stock will be found an immense advantage, when one wants to feed them in this way. Every animal about the farm should be a pet, and should love, and not fear, its owner. It will save much work and trouble, if this is the rule.

Work in the Horticultural Departments.

In view of the fact that the *Agriculturist* is taken in nearly every country of the world, it would be impossible to lay out work for every one everywhere. Indeed, in view of the difficulty of doing this for a limited portion of our own country, we long ago ceased to call these notes a "Calendar," and our new readers will find the title, Hints About Work, to describe their contents. We gather here such matters as the non-professional gardener and novice in farming is likely to need, and though these "hints" have in a general way reference to the season, they are not to be regarded as "sailing directions." If one must work by written formula, he will find the record of the work of one year, in which his failures, as well as his good hits, are noted, of far more value to him in his locality than the most elaborate calendar made by another.

Orchard and Nursery.

Care and attention are constantly required. The careless leaving of a gate open or a fence down may result in great damage to the young trees from the depredations of cattle. While shutting out the stock of others, properly shut in your own.

Mice and Rabbits need to be looked to after light snows. Tramp down the snow around the trees, to head off the mice, and sprinkle blood upon the trunks to keep rabbits away.

Pruning.—If pruning is to be done, attend to it before the buds swell in the least. Never cut out a branch without having a reason for doing it, and also strive to give the trees a low, open head to enable them better to withstand the strong winds, to shade the trunks, and to allow the sun and air to reach all parts of the tree. When the orchard is cultivated, the heads will have to be kept higher to allow the teams to pass under them.

Suckers should be cut off, and as soon as the weather will allow, the ground directly around the trees should be broken up, and the moss and dead bark removed by soft-soap wash.

Manure may be carted to the orchard at this season and spread or placed in heaps. It can be hauled at this season of the year on sleds.

Labels will be needed for newly set trees, and should be prepared beforehand. Large nursery labels are best made out of red cedar; if this wood is not convenient, pine or chestnut will last a few years, but cedar is the cheapest in the end.

Map the Orchard.—Show the boys how to make a correct plan of the orchards and nursery; on this should be indicated the correct position and name of every tree; this will be found the only way to preserve the names where an orchard is planted with several varieties.

Fruit Garden.

Selections of various kinds of fruits for planting out the coming spring should be made early, and ordered in time to set out as soon as the ground will permit. In planting a fruit garden for family use, select to embrace both early and late sorts of each kind. With care in selecting, the season of each fruit may be greatly extended.

Blackberries and Raspberries.—If new settings are to be made in the spring, and plants are not at hand, order at once, as they start so early that they cannot be planted too soon after the ground is open.

Strawberries.—There is now a great variety of strawberries, the plants are remarkably cheap, and every one, rich and poor, should have an abundance. A bed of a few rods in extent will supply a large family, if cultivated properly.

Currants coming soon after the strawberries and raspberries, supply a place held by no other fruit; provide enough bushes to freely supply the table during the season, and for jellies and other uses. New plants are easily raised from cuttings made either in the fall or early spring, and in two or three years these plants will be in abundant bearing, and with proper pruning and manuring may be made to produce fruit of extra size. During mild weather, when the wood is not frozen, prune the bushes and preserve the cuttings in sand in the cellar. The Versailles (red) and White Grape are the most profitable. Every spring a dressing of well-rotted manure should be given, and a thick mulch applied to keep down all weeds.

Gooseberries require the same general cultivation as currants, but need more pruning to give the plants an open head to admit light and air. The American varieties are best, among these, Houghton's and Downing's Seedlings are favorites.

Grapes.—The garden culture of the grape is so simple that it is strange that no more vines are planted. The number of varieties is now large and the experience of others in the neighborhood is the safest guide in selecting. We have given from time to time the various methods of pruning and training the vine. The matter is not difficult, the one thing to bear in mind is that the fruit is produced on the new growth, which will start this year from the buds now on the canes. In pruning, all the buds are cut away, save those needed to form new canes.

Stakes and Trellises may be prepared; locust or red cedar stakes are most durable, while chestnut for horizontal strips is cheap and fairly lasting. If locust is too dear to be used for the whole stake, a strip two and a half or three feet long may be set in the ground, and the rest of the post, made of other wood, be spiked to it. All wood used for the above purposes should be got out of the proper size and shape, stored under cover, and so piled up that the air will have free circulation through and around it. If the parts which are to be placed in the ground are given a thorough soaking in petroleum, they would last much longer, except, perhaps, in the case of locust.

Kitchen Garden.

Whether one has his garden in Georgia or in Canada, he needs a hot-bed, one only will do for a private garden, while the "trucker" needs rows of these and frames. Most plants require about six weeks from the sowing of the seed until the time they are large enough to set in the open ground, and this will serve as a general rule, though not an absolute one. If one wishes very early tomatoes, he takes his plants from the hot-bed, where they were sown, and transplants them to another hot-bed; and so with some others. A position for hot-beds should be selected where there is ample shelter on the north and west sides; also see that they are not placed near buildings which harbor mice, as these pests often destroy an entire sowing of seeds. The frames should be 18 inches high at the back, and 12 inches in front, and wide enough to hold the sash, which is usually 6 x 3 feet; the length of the frame must be governed by the quantity of seeds to be sown. Frames made of inch and a half chestnut plank put together with hooks at the corners, are more durable, and can be stored in a small space when not in use. Where early hot-beds are made, they often require, what is called, "lining," or the application of fresh manure to the outside to keep up the heat.

Cold frames in which cabbage and lettuce plants are kept over winter, require air every day when the weather is not freezing. During storms the snow may be left on the sashes a few days without injury to the plants. In very cold nights the sashes must be covered with mats or shutters.

Seeds.—Whatever seeds are not grown at home, should be ordered from some reliable seed-house, and the sooner this selection is made, the more likely the desired varieties can be had. When left until just before sowing time, there is a liability of not getting what is ordered, as the rarer sorts are usually the ones first sought. The postal laws allow seeds to be sent by mail at very cheap rates, and there is no necessity for planting an inferior kind. Never rely for the main crop upon any novelty, no matter how glowing the catalogue description may be, success may attend such a course, but in nine cases out of ten, it will be otherwise. When seeds are raised at home they ought to be kept in a cool, dry room, where mice will not get at them. Such seeds as beet, carrot, parsnip, and others, may be readily raised in the garden, if care is taken to select only the earliest and finest formed roots as seed bearers. Seeds of cucumbers, squashes, and melons of all sorts are so liable to mix that home-raised seed cannot often be relied upon.

Manure.—Turn the heap when too hot, to prevent burning, and to fine the manure. Sods, muck, and whatever other material is at hand, should be composted in the heap. Save all house-slops and whatever can be turned into manure. For garden purposes manure that has lain a year is best, but as this can seldom be had, every means must be taken to get it into a fine state so that its action may be quick and effective. The refuse of many kinds of factories and mills can be utilized.

Tools must be put in proper order, so that the men will not be delayed when work begins. Duplicates of all the smaller tools should be provided in case of breakage, and also for extra hands which may be employed occasionally. Have all steel points free from rust, and the wood thoroughly coated with crude petroleum. Mark all your tools.

Vegetables stored in the cellar must be looked after, and if the weather is mild, the doors and windows opened during the middle of the day. A ventilator ought to be provided for every root-cellar; it may be six to ten inches square, made of pine or hemlock boards; place in one corner of the building, having the exit under the eaves where snow and rain will not enter; this ventilator will take away the disagreeable exhalations. A wooden slide may be provided to shut and open the ventilator.

Brush and Poles for peas and beans must be cut now if not yet done.

Flower Garden and Lawn.

But little can be done here except to follow the hints of last month. Should the snow be off, the rubbish which was left last fall may be gathered and removed to the manure, or burn heap, as the case may be. If any of the coverings given to half hardy plants have been removed by winds or other means, replace them immediately. Make plans for any improvements which are to be carried out this spring. If new roads or walks are to be made, gravel and other road material may be carted while the teams are not busy.

Trees and Shrubs.—If any are to be planted in the spring, order now, so that they may be on hand as soon as the ground will allow them to be set. Evergreens, with a fair share of deciduous kinds intermixed, make a better appearance than if either was used alone. Never set evergreens so near the house that they will exclude light from the rooms.

Greenhouse and Window Plants.

The plants, both in the house and greenhouse, should now look their best, and this can only be secured with care and attention. The plants must be kept in a growing and healthy condition. Careful ventilation is needed, and a constant watch for the numerous insects which infest all house-plants.

Camellias.—Re-pot, if they need it, when the bloom is over. Use fresh loam, mixed with a small portion of sand, taking care that the earth is pressed down firmly around the roots. Keep in a cool house, and syringe once or twice a week.

Forcing.—Such plants as Astilbe Japonica and Dicentra, and the like, may now be brought from the cellar, and placed in a warm greenhouse, where they will soon show their flower-stalks. Both of the above plants are excellent for forcing.

Greenhouse Shrubs, such as Acacias, Banksias, Daphnes, Oranges, etc., which flower in the early spring, will not usually require watering more than two or three times a week. Give plenty of air, for without it the plants will not produce perfect flowers

Cuttings may be made now of the various soft-wooded plants, which will be needed either for planting the borders in spring, or for exchanges.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Jan. 13th, 1875, and for the corresponding month last year, also for the year ending Dec. 31, 1874:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 d's *this* m'th	324,000	459,000	1,617,000	13,800	57,000	407,000
25 d's *last* m'th	367,000	2,376,000	1,404,000	129,000	307,000	1,312,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 d's *this* m'th	291,000	2,911,000	1,918,000	54,000	251,000	2,105,000
25 d's *last* m'th	360,000	3,001,000	2,815,000	92,000	289,000	1,209,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 days 1874	324,000	459,000	1,617,000	13,800	57,000	407,000
24 days 1873	280,416	2,192,000	279,000	26,000	75,000	535,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 days 1874	291,000	2,911,000	1,918,600	54,000	251,000	2,105,000
24 days 1873	328,000	2,651,000	1,614,000	48,000	289,000	1,410,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Jan. 11, 1875	3,675,122	1,049,900	50,889	191,470	877,014	145,647
Dec. 7, 1874	4,513,396	1,220,973	15,925	168,391	890,899	135,622
Nov. 9, 1874	3,690,141	1,727,540	19,123	117,185	794,722	135,882
Nov. 10, 1873	1,720,338	3,133,896	22,907	232,942	735,153	82,674

4. *Receipts at head of tide-water at Albany each season to Dec. 1st.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1874	165,200	23,791,500	17,723,200	337,600	3,428,400	3,584,500
1873	153,500	22,761,700	18,552,200	950,260	2,153,000	3,385,900
1872	137,300	11,349,100	29,928,700	474,600	4,548,600	5,696,000
1871	290,700	21,313,400	20,042,900	1,107,900	3,839,400	6,689,400
1870	430,400	17,124,700	4,805,100	587,500	3,984,700	6,167,500

5. *Receipts of Breadstuffs in New York in each of the last six years:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1874	4,017,307	41,817,215	29,329,000	592,114	2,776,025	10,792,919
1873	3,346,568	33,559,870	24,589,345	992,447	2,448,326	11,235,420
1872	3,037,771	16,229,418	25,292,156	491,563	5,117,351	12,486,348
1871	3,618,065	26,518,260	27,108,156	1,055,621	3,869,123	12,546,966
1870	4,143,963	24,085,743	9,143,478	550,169	5,020,718	9,626,606
1869	3,533,716	29,813,632	11,666,784	357,803	3,007,938	8,747,522

6. *Exports from New York, Jan. 1 to Dec. 31.*

	Flour.	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
1874	2,177,608	34,791,249	19,000,995	641,661	3,560	122,528
1873	1,655,331	27,801,829	15,587,527	1,009,148	19,376	49,710
1872	1,179,050	13,144,956	27,864,000	668,547	22,656	31,480
1871	1,650,755	21,968,643	13,046,570	525,772	98,745	47,310
1870	1,950,234	18,446,035	487,792	92,451	——	28,986
1869	1,582,211	18,240,586	1,637,386	142,542	——	49,393

7. *Comparative Stock of Flour in New York, Jan. 1:*

	1872.	1873.	1874.	1875.
Western and State Flour	330,197	322,124	244,412	261,769
Canada Flour	300	1,800	1,050	100
Southern Flour	25,974	36,700	24,289	15,320
California Flour	100	3,000	——	250
Grand total, bbls.	356,271	363,624	269,751	277,439

8. *Comparative Stock of Grain in New York, Jan. 1:*

	1872.	1873.	1874.	1875.
Wheat, bushels	4,227,181	1,996,984	1,258,600	4,600,711
Corn, bushels	1,439,804	6,125,803	1,272,500	1,146,408
Rye, bushels	573,557	110,854	14,630	114,899
Barley, bushels	565,772	1,211,176	194,400	561,951
Oats, bushels	2,574,586	1,765,699	471,600	1,283,464
Malt, bushels	129,480	258,402	26,530	183,775
Peas, bushels	9,500	9,292	12,470	15,189

CURRENT WHOLESALE PRICES.

	Dec. 13.	Jan. 12.
PRICE OF GOLD	111 5-8	112 3-8
FLOUR—Super to Extra State	$3 70 @ 5 80	$4 00 @ 5 75
Super to Extra Southern	4 80 @ 8 50	4 75 @ 7 25
Extra Western	4 65 @ 8 25	4 60 @ 8 00
Extra Genesee	5 00 @ 7 00	5 00 @ 6 75
Superfine Western	3 70 @ 4 40	4 00 @ 4 50
RYE FLOUR	4 35 @ 5 60	4 00 @ 5 25
CORN-MEAL	4 20 @ 5 00	4 00 @ 4 85
WHEAT—All kinds of White	1 25 @ 1 40	1 25 @ 1 35
All kinds of Red and Amber	1 05 @ 1 30	1 07 @ 1 31
CORN—Yellow	89 @ 94	87½@ 90
Mixed	88 @ 96	86 @ 96
White	89 @ 95	87 @ 89
OATS—Western	67 @ 70	67 @ 71
State	66 @ 70	65 @ 71
RYE	92 @ 98	93 @ 96
BARLEY	1 25 @ 1 65	1 25 @ 1 60
HAY—Bale, ₱ 100 lbs	55 @ 95	55 @ 95
STRAW, ₱ 100 lbs	40 @ 65	45 @ 65
COTTON—Middlings, ₱ lb	14¾@ 14¾	15⅝@ 15⅝
HOPS—Crop of 1874, ₱ lb	35 @ 50	30 @ 50
FEATHERS—Live Geese, ₱ lb	35 @ 65	35 @ 65
SEED—Clover, ₱ lb	9¾@ 10	10¼@ 10⅝
Timothy, ₱ bushel	2 75 @ 2 85	2 75 @ 2 85
Flax, ₱ bushel	2 15 @ 2 20	2 05 @ 2 40
SUGAR—Refi'g & Grocery ₱ lb	6¼@ 9⅜	6 @ 9¼
MOLASSES, Cuba, ₱ gal	32 @ 45	Nominal.
New Orleans, ₱ gal	55 @ 65½	58 @ 67
COFFEE—Rio (Gold)	17 @ 19½	17⅜@ 20¾
TOBACCO, Kentucky, &c., ₱ lb	9 @ 25	9 @ 25
Seed Leaf, ₱ lb	8 @ 60	8 @ 60
WOOL—Domestic Fleece, ₱ lb	28 @ 65	28 @ 65
Domestic, pulled, ₱ lb	27 @ 55	27 @ 55
California, clip	16 @ 38	16 @ 37½
TALLOW, ₱ lb	8¼@ 8⅝	8⅜@ 9
OIL-CAKE—₱ ton	43 75 @46 00	43 50 @47 00
PORK—Mess, ₱ barrel	20 62½@20 75	20 00 @20 50
Prime Mess, ₱ barrel	19 50 @20 50	18 75 @19 50
BEEF—Plain mess	9 50 @11 00	9 50 @10 50
LARD, in trcs. & barrels, ₱ lb	13½@ 14¾	13⅝@ 14¾
BUTTER—State, ₱ lb	25 @ 45	25 @ 45
Western, ₱ lb	18 @ 35	18 @ 35
CHEESE	6 @ 16	6 @ 16¾
BEANS—₱ bushel	1 60 @ 2 70	1 60 @ 1 70
PEAS—Canada, free, ₱ bu	1 25 @ 1 83	1 25 @ 1 85
EGGS—Fresh, ₱ dozen	24 @ 30	29 @ 33
POULTRY—Fowls	10 @ 15	10 @ 18
Turkeys—₱ lb	6 @ 15	10 @ 17
Geese, ₱ pair	1 37 @ 2 50	1 00 @ 2 25
Ducks, ₱ pair	50 @ 80	50 @ 1 00
PIGEONS, ₱ dozen	2 25 @ 2 50	— @ —
WOODCOCK, ₱ pair	50 @ 65	— @ —
GROUSE, ₱ pair	40 @ 75	50 @ 65
PARTRIDGES, ₱ pair	30 @ 75	40 @ 65
VENISON, ₱ lb	10 @ 16	10 @ 16
WILD DUCKS, ₱ pair	30 @ 1 75	40 @ 1 75
WILD TURKEYS, ₱ lb	— @	15 @ 20
QUAIL, ₱ dozen	90 @ 1 50	90 @ 2 00
HARES, ₱ pair	50 @ 75	50 @ 50
RABBITS, per pair	35 @ 40	30 @ 40
TURNIPS ₱ bbl	1 00 @ 1 25	1 00 @ 1 25
CABBAGES—₱ 100	3 50 @10 00	4 00 @ 7 50
ONIONS—₱ bbl	2 25 @ 3 00	2 25 @ 3 00
POTATOES—₱ bbl	1 75 @ 2 50	1 62 @ 2 25
SWEET POTATOES—₱ bbl	3 00 @ 3 25	3 00 @ 4 00
BROOM-CORN	9 @ 14	9 @ 15
GRAPES, ₱ lb	3 @ 10	8 @ 9
APPLES—₱ barrel	1 00 @ 2 25	1 00 @ 2 25
CRANBERRIES—₱ bbl	2 25 @10 00	5 00 @10 00
GREEN PEAS, new, ₱ bushel	1 65 @ 2 00	1 85 @ 1 90
SQUASH, ₱ bbl	1 25 @ 1 75	— @ —
CAULIFLOWERS, ₱ dozen	1 50 @ 5 00	— @ —
HORSE RADISH, per bbl	5 00 @10 00	5 00 @10 00
PEPPERS, per 100	50 @ 1 00	— @ —
CELERY, ₱ dozen	— @ —	1 00 @ 1 50

Gold has been up to 113, and down to 111¼, closing January 12th, at 112⅜ as against 111¼ on December 12th.... Produce movements have shown less animation. Receipts and sales of Breadstuffs have been on a restricted scale, and values have been generally depressed. There has been less inquiry from export buyers, checked, in part, by the scarcity of ocean freight room. Toward the close, rather more demand has been noted at the ruling figures, chiefly for shipping grades of Flour, No. 2 Spring and Amber Winter Wheat, new mixed Corn, Canada West Barley, and mixed Oats, on a steadier basis as to values....Provisions have been in fairly active demand—hog products attracting more attention from speculative and export buyers—and closing more firmly ....Cotton has been quite freely dealt in, largely on speculative account, at advanced prices....Wool has been more sought after, and quoted stronger in price. The stock of domestic Wool in this market on the 1st inst., comprised 7,217,000 lbs. (as against 4,559,000 lbs. a year ago), including of Domestic Fleece, 1,494,000 lbs.: Pulled, 410,000 lbs.; Tub-washed and Scoured, 106,000 lbs.; Texas, 1,207,000 lbs.; California and Oregon Spring, 1,987,000 lbs.; California and Oregon Fall, 1,927,000 lbs.; California and Oregon Pulled, 23,000 lbs.; Colorado, 20,000 lbs.; Georgia and Lake, 43,000 lbs....Hops, Hay, Straw, and Tobacco, have been held with more confidence, though not active....Seeds have shown more firmness, with a better demand noted for Clover, both Western and State.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Dec. 21	8,546	84	1,074	18,685	40,949	69,338
Dec. 28	6,547	77	688	19,650	39,559	66,521
Jan. 4	7,416	47	518	13,745	19,386	41,112
Jan. 11	7,299	110	817	23,362	35,041	66,629
Total for 4 Weeks	29,808	318	3,097	75,442	134,935	243,600
do. *for prev. 5 Weeks*	41,272	351	6,346	130,732	247,412	432,113

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	7,452	79	774	18,860	33,734
do. do. *last Month*	8,254	70	1,269	23,346	49,442
do. do. *prev's Month*	9,817	59	1,770	29,887	43,177

Beef Cattle.—As compared with the supply for 1873, that of 1874 shows an increase of 11,289 beeves, although a decrease occurred in all other classes of stock. In looking back over the business of the past year, the most noticeable facts are the falling off in quality of the stock offered here, and the higher rates paid for fat stock; but chiefly the unprofitable character of the business of the butchers, which has caused numerous and heavy failures. Commission men have lost at least $300,000, by reason of these failures. For the past month business has been generally active, with only slight fluctuations in values. The closing business showed a gain over the prices of the week previous, with an active market. Native steers ranged from 9¼c. for poor @ 14¾c. ₱ lb for premium beasts, to dress 55 to 60 lbs. ₱ gross cwt. Texans sold for 9 cents, to dress 54 lbs., and a lot of yearling heifers brought 8¾c. ₱ lb. to dress 54 lbs. ₱ cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Dec. 21	8 @15½c.	10¾@11½c.	11 c.
Dec. 28	8 @14¾c.	10¾@11¾c.	11¼c.
Jan. 4	7¾@14 c.	10½@11½c.	11 c.
Jan. 11	8 @14¾c.	10¾@11¼c.	11 c.

Milch Cows.—The market for cows has been without change, with a brisk demand. Choice fresh milkers sold quickly for $50@$90 per head. Springers were not wanted.....**Calves.**—There has been a steady demand for good veals, and the market may be called active at 7@11c. ₱ lb. for poor to good. Grassers are selling at $7@$12 per head. 36 yearlings sold for $18@$18.75 per head.....**Sheep and Lambs.**—A large business has been done in sheep, without change in prices. Poor to good sheep sold at the close at 5¾@7¾c. ₱ lb., and a lot of mixed extra sheep and lambs at 8¼c. ₱ lb ...**Swine.**—There is nothing new to notice in regard to swine. The market has been steady, and closes with sales of live hogs at 7¾c. ₱ lb. for 160 lb. Ohios, and dressed at 8⅛@8¾c. for Western, and 8⅜@9c. ₱ lb. for City.

N. Y. Live Stock Trade for 1874.

Beef Cattle.—Total reported receipts in '74...454,000
do. do. do. '73...443,000
do. do. do. '72...425,000
do. do. do. '71...381,000

Average Weekly Receipts during 1874.....8,730

Average prices ₱ lb for the net weight of the dressed carcasses, ranged in Jan. 10¼@11c., Feb. 10¼@10½c., Mar. 10¼@11¼c., April 11@10½c., May 11½@11c., June 11½@12@11¼c., July 11@11¼c., August 11¼@11c., Sept. 10¼@10½c., Oct. 10@10½@9¼c., Nov. 9¼@10c., Dec. 10@11¼c. These prices are for good qualities; extras run higher, and lower grades much under these figures.

Of these cattle about 260,000 arrived at the Jersey cattle yards, 30,000 at the Wehawken yards, and 160,000 at the One-hundreth street yards. They were credited to the following States: Illinois 230,000, Texas 75,000, Kentucky 32,000, Missouri 30,000, Ohio 25,000, Virginia 14,000, N. Y. 13,500, Indiana 12,500, Colorado 12,500, Iowa 6,000, Michigan 1,400, Kansas 1,100, Canada 850, Pennsylvania 400, with smaller lots from N. J., Md., and Neb. Doubtless Illinois gets credit for some cattle merely brought through that State, and Texas for some gathered in the Indian Territory, etc.

Milch Cows.—Reported receipts for the year, 3,700, or about 70 a week.

Veal Calves.—Receipts for the year about 100,000, or about 2,000 a week, ranging from 600 a week in Jan. and Feb., to 3,000@4,400 in May and June.

Sheep and Lambs.—Receipts for the year about 1,200,000, or 23,000 a week, ranging from 10,000 a week in May to near 30,000 in Aug. and Sept. The prices ₱ lb live weight for good sheep, ranged from 7c. to 9c. between Jan. 1st and May 15th; and for shorn sheep 5½@6½c. from June to Dec., and 7c. in December.

Live Hogs.—Receipts for the year about 1,800,000, or 35,000 a week, ranging from 20,000 to 30,000 a week in winter and midsummer, to 40,000 and 50,000 in November and December. Prices ₱ lb live weight 5@6c. the first six months, 7@7½c. in July, Aug. and Sept.; 6½@7c. Oct. 1 to Nov. 15; 7½@7¾c. in Nov. and Dec. The weekly receipts of live hogs in the N. Y. markets have ranged about as follows: 1869, 6,000; 1870, 17,000; 1871, 25,000; 1872, 37,000; 1873, 38,000; 1874, 34,000.

To be Had without Money.—There will be found upon our Premium List (see page 73) a large number of most useful and valuable articles, all of which are new and of the best manufacture, and any of which can be obtained *without money* and with but a little *well directed effort*. Among these are: **Beautiful Silver-Plated Articles—Fine Table-Cutlery—Gold Pens with Silver Cases—Children's Carriages, Swings, etc.—Watches—Pianos—Melodeons—Pocket-Knives—Guns—Cultivators—Sewing, Knitting, and Washing Machines—Books, etc., etc.**—Read all of page 73, and see how easy you can obtain one or more of these good and desirable articles.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our Western Office.—Our friends in the West are reminded that we have an office at Lakeside Building, Chicago, Ill., in charge of Mr. W. H. Busbey. Subscriptions to *American Agriculturist* are taken there, and sample copies of the paper and chromo are delivered, and orders received for advertising on the same terms as in New York. All our books are on sale at the Western Office. Please call and examine, buy, subscribe, and advertise.

Busy—Busy—Busy.—Those in charge of the Premium Department in this office have been wonderfully busy, for over a month past, in sending off a very large stock of the splendid articles offered in the Publisher's Illustrated Premium List. (If any reader has failed to get a copy of that extra sheet, send for it without delay.) The **15,000** men, women, and children, who have received these various premiums, have been delighted with them in almost all cases. **February** is a capital season for a multitude of others to get, free, their choice out of a large variety of first rate useful articles. You, reader, may as well be one of the fortunate recipients of these premiums, and do it this month. See page 73, and also read over the Illustrated Premium Supplement—sending for it if you have not a copy at hand.

Changes and Improvements.—No doubt that to many constant readers this issue of the paper will wear a slightly unfamiliar look. If they try to find why this is, the most that they will discover is that the different departments are not in precisely the same places in which they have been accustomed to see them. Change is of but little use unless it brings improvement, and in this case we think the improvement very material. Formerly each department was within a set boundary, but now while each has more reading matter than ever before, and the Boys and Girls columns twice as much, they are so arranged that they can be made larger or smaller, to meet the need of each month. In certain months in the year we are pressed for room for advertisements, but we could not formerly add a single leaf to a number without so increasing the weight that the subscribers would be charged double postage. Now that postage is paid here and by the pound, we can add as we please, and in arranging so that any amount of advertising can be accommodated, we have been able to give more room to reading matter, and thus every one is benefitted. The newness of the mechanical arrangement will wear off with a single month, and each reader will have very much more than we have ever before given.

Tim Bunker, Esq.—Those who have read the *Agriculturist* these many years, have of late felt the loss of the teachings of the Hookertown Squire. Though the same pen has given them good articles in another form, they have not recognized him, and have often asked for Tim Bunker. The old gentleman has been a great traveler of late years, and now that he has once more quietly settled down, we have reason to hope that his letter in the present number is but a renewal of his former series. To our newer readers, those who only now make the acquaintance of Squire Bunker, we can say that he is one of the best farmers in the country, and that, under his quaint way of putting things, there is always a great deal of sound practical sense. And we may add just here, that the collected "Tim Bunker Papers," published by the Orange Judd Co., (See Book List,) are not only entertaining reading, but contain the most solid sugar-coated instruction, and every farmer boy, and every farmer man too, will be profited as well as amused by reading the book, and ought to do it.

B. K. Bliss & Sons' Potato Prizes.—Last spring these enterprising seedsmen made the very liberal offer of $1,500 in prizes for the largest yield of potatoes grown from seed purchased of them. Of this amount $750 was for the largest yield from one pound of seed, and $750 for the largest yield from one quarter of an acre. A committee of three was appointed to decide upon and award the prizes. They made their report in December last, from which we are only able to give the names of the winners of first prizes in each class. For the largest quantity of Extra Early Vermont, from one pound of seed: 1st prize of $100 to A. K. Titus, Wilmington, Vt., yield, 708 lbs. For the largest quantity of Compton's Surprise from one pound: 1st prize of $100, to P. C. Wood, Esther, Ill., yield, 900 lbs. For the largest quantity of Brownell's Beauty from one pound: 1st prize of $100, to H. C. Pearson, Pitcairn, N. Y., yield, 1,018 lbs. For the largest quantity of Extra Early Vermont, grown on one-quarter acre: 1st prize of $100, to D. Steck, Hughesville, Pa., yield, 6,347 lbs. For the largest quantity of Compton's Surprise on one-quarter acre: 1st prize of $100, to Mrs. M. A. Royce, Home, East Tenn., yield, 7,350 lbs. For largest quantity of Brownell's Beauty on one-quarter acre: 1st prize of $100, to A. Rose, Penn Yan, N. Y., yield, 8,899 lbs.

A Pigeon Show.—The National Columbarian Society, whose first show last year was such a success, will hold its second exhibition in New York City, on the 25th inst. The Secretary is L. Burlingame, 14 Murray street, who will furnish prize lists.

Aid for Kansas.—We are requested to state that women and children's clothing and money will be needed for some months yet in Kansas. Members of Granges that desire to assist their brethren in Kansas, may communicate direct with John G. Otis, State Agent of the Patrons of Husbandry, W. P. Popenoe, or Halstead Johnson, Topeka, Kansas.

That "GRAND BAZAAR."—We have before spoken of the assortment of goods, wares, seeds, implements, animals, books, etc., etc., etc., arrayed in our advertising columns, as a "Grand Bazaar," where the reader is introduced directly to a very great variety of articles brought together by a multitude of dealers, all of whom are believed to be men who will do what they promise. (Those in special charge of that department are instructed not only to shut out quacks, medical or other nostrums, etc., but to admit no advertiser whom they would not be willing themselves to send an order to with cash in advance, if necessary.) This department is a great convenience to our hundreds of thousands of readers scattered all over this country, and in many other lands. It will pay them to carefully examine all the advertisements, for many business hints and suggestions will thus be gathered. They will also find what is for sale, and where. The present Mail facilities for cheap carriage of seeds and many other articles gives almost equal advantage to the remotest dweller in the distant territories, and those near populous centers. We introduce our Readers to these Dealers; they invite you to examine their offerings, to send for their circulars, etc. When writing to them, please let them know you belong to the great *American Agriculturist* family, and you may expect and will receive good treatment.

SUNDRY HUMBUGS.—Last month we gave, especially for the benefit of the many new friends who make our acquaintance with the new year, an outline sketch of the *Humbug* family, with indications of some of the more prominent genera and species. We might in that article have discussed the geographical distribution of humbugs, for they spread from the point where they originate—usually from east to west, but not always, at a rate of progression which is interesting to those who are obliged to observe them. As one who goes from a city to some distant and secluded village finds that the fashions in the village are just what were in vogue in the city two or three years ago, so our humbug files of to-day show that Salt Lake City and the mining towns of Colorado and Nevada are being infested by the same humbugs which but a few years before were making New York and Chicago the scene of their operations. Requests come, as heretofore, to expose this or that person who the writer thinks is engaging in some swindle. It is very easy to write to us

"SHOW HIM UP,"

and it would be equally easy for us to act upon this request, but that is not the way in which these columns are conducted. While we take much responsibility in protecting the public from loss by exposing frauds, we take also the greatest care that no innocent person shall be injured. It is only those who pursue a systematic and persistent course of fraud whose portraits are regarded as worthy a place here.... Some of our correspondents think we are too lenient with the

REAL ESTATE AGENTS

of whom they have complained. This is one of those cases in which, while we have no doubt that deceit is practiced by the holding out of extravagant promises, we have no actual proof that fraud has been committed. We have, some months ago, given extracts from the letters of these real estate chaps, and left our readers to draw their own conclusions. The plan of operations is this. You, the reader, advertise a farm or other property for sale; in all probability you will receive a letter from one of these New York concerns *guaranteeing* to sell your property before a given date, for a commission of 2½ per cent. *but* for preliminary advertising and other expenses, they wish you to remit $10 or $5, as the case may be. The complaints made are that the agents get the $5 or $10 and do not sell the property. The strange part in all this is, that anybody can be so innocent as to believe that they would. An agent can no more guarantee the sale of real estate than he can the drawing of a lottery ticket, and the very fact that one promises the impossible should deter all sensible people from trusting him... A cold climate does not seem very favorable to the growth of humbugs, but we now and then get one from in Canada. This time it is a remarkable sale of

FLASH JEWELRY AND OTHER GOODS,

on the old plans of "anything on this board for a shilling," owing to "financial embarrassments," "great depression of business," and all that, "an immense quantity of the choicest articles of European manufacture," have been sent to Durand, James & Co., Montreal, for sale at the uniform price of $2.75 currency, and 25 cents for postage and packing. "Coupons" or tickets, each enumerating some article are indiscriminately mixed, and one by paying 25 cents (or 5 for $1) can get a coupon telling him what he can buy "for his $3." Lovely little bit of machinery. Charming Durand, James & Co. Silly, stupid fools that get caught in such a network.... The area of semi-official lottery gambling has extended, and now we have the

TEXAS GIFT CONCERT,

which has all the wonderful inducements to invest in this form of gambling that we have become wearied of reading in the circulars of that lovely perennial thing, the Kentucky Library concern. Texas has made such wonderful strides in improvement within a few years, that we regret to see her follow the example of the older States for evil as well as for good.

UNUSUAL WAYS OF SELLING THINGS

are always to be looked upon with distrust. If one has a good article to sell, he requires no machinery to help get rid of it. Paper is one of the commonest articles of commerce, and that of a given quality has a regular price as much as coal, flour, or iron, and any unusual methods of disposing of it are to be regarded with caution; if one advertises a staple like paper in an expensive manner and sends out circulars, the cost of doing this will be paid by the purchaser in the increased price provided he ever gets his paper. We say, "provided he

gets his paper," as we have had for some time various complaints as to a concern in New York city which calls itself a "paper company," and which has advertised largely through the country for agents to sell paper which can be furnished to consumers at one-third less than the usual prices. For 50 cents they propose to send applicants a box of samples actually worth $1. Some of our correspondents say that they have sent 50 cents and have received in return only a few sheets of paper, with a promise to send more when it was ready. Others have received no paper, but a circular stating that the stock of boxes of samples was exhausted, but that "the 50 cents already paid for samples will be allowed on $10 or $20 orders." The complaints are so many, and the answers look so suspicious, that we advise this paper concern to satisfy the demands of those who have sent them money, or we shall be obliged to mention the names of the parties concerned. In the meantime we repeat our advice, to buy paper, pork, and other goods in the regular way....

LIGHT FROM UTAH

has reached us as to the ways of the non-explosive powder man. The fellow who by a pinch of his powder not only renders dangerous oils non-explosive, but likewise prevents the chimney from breaking, and for all we know, puts the baby to sleep at the same time, has beamed upon the Salt Lakeians. And even an editor has been found green enough to endorse it. We have long ago stated on general principles that this was some inert substance, but we now take it all back. It is by no means a valueless substance, indeed so important is it that the world could hardly get along without it, and as to its being inert, it is possessed of the most wonderful powers. One portion of it is a metal, as brilliant as silver, and so rare that but few persons have seen it, while another portion of it is one of the most powerful and corrosive of all things, and will dissolve gold itself, and as it can create grand explosions, why should it not prevent them? This remarkable compound is called by chemists the *sodium chloride*, or *chloride of sodium*, and though ordinary people know it as common salt, it is not the less useful and wonderful. We have long wished to see this much talked of non-exploding compound, or as it is now called "Coal Oil Rectifier," and are thankful to the Utah friend who forwarded a small sample just large enough for an analysis, which showed this much talked of stuff to be only common salt colored blue, apparently with ultramarine. The rascality of this precious humbug does not so much lie in the fact that people pay a large sum for a very cheap article, but that it leads to a false notion of security. And by trusting to the supposed efficacy of this stuff may be induced to burn unsafe oils. Recollect, that *nothing* added to a dangerous oil can by any possibility make it safe to use.

THE WALL-STREET GAMBLERS

evidently find persons who have so little use for their money as to trust it to them, as they appear to get enough with which to pay for their rather extensive advertising. The "high-toned" and "leading" newspapers of the city allow these gamblers to spread their nets in their columns, but we are not so much surprised at that as at the agricultural papers, which of all others, should be the farmer's true friends, and protect him from all hidden dangers, which publish the tempting offers of these fellows of 200 per cent a month on money invested with them. We have mentioned this matter several times, but yet friends write to us to know if it is safe to send money to these gamblers. Never play any game you do not understand....The trade in

INDECENT BOOKS AND PICTURES

is evidently seriously interfered with by the activity of the officers of the Post-Office Department, as we know, by the fewer complaints that come to us, and the large amounts confiscated by the officials. Still some of these scoundrels manage to elude the officers for a while. One gentleman sends us a most objectionable affair sent to his little girl, whose name has somehow been obtained, and the officers inform us that the amount of obscene literature that finds its way to the boarding-schools and academies for youth of both sexes is perfectly appalling. A young man sends us the circular of a firm which wishes him to act as their agent, and asks us if they are reliable men to deal with. Young man, don't you know better than to come to us for such information? Don't you know that there is not a book or picture offered in these circulars that you would dare to offer openly? If you can understand the meaning of language you should see that these works are of the most pernicious kind, and that it would be a moral crime for you to be the "agent" for introducing them anywhere. We are glad to say that Mr. A. Comstock, upon whom one of these obscene book fellows made a murderous assault, is again out and attending to his duties; his face bears a fearful scar, but it will not prevent him from ferreting out such chaps with more than his former energy. The would-be murderer was convicted under the name of Charles Conroy, though he had 17 other names under which he operated. Through some legal technicality he could be imprisoned for only two years and be fined $500....Another business seriously interfered with by the postal regulations is

COUNTERFEIT MONEY OR QUEER.

We do not now get more than one-tenth of these schemes that we did a few years ago. The method of conducting this swindle has been fully given in former articles. One new name in this business is L. H. Walker, who impudently gives the St. Nicholas Hotel, N. Y., as his address.

IN MEDICAL MATTERS

we have some letters that are really pathetic, showing how eagerly afflicted persons catch at any hope of relief, and how readily those who recklessly promise relief can find a hearing. A proper physician will promise nothing, while a quack will not only promise, but assert his "no cure no pay" claim. If a patient can hope for no relief in his case, a medical man will tell him so, while the quack will delude the poor sufferer with hopes of a cure, at least so long as the money lasts. Notwithstanding our often repeated statement that we can not advise any one to have anything to do with any advertising doctor whatever, we continually get letters from those who have been so impressed by the plausible circulars of these fellows that they write us asking if they could not safely employ this or that one of them. One lady in New Jersey has invested a good sum with a New York consumption curer, and asks if she shall continue to invest. The good unselfish soul says, not for her own sake, but "for the sake of my children." It seems unkind, it is so easy to say *yes*, for us to answer, good madam, any man who will offer to prescribe for you from seeing your photograph, is a man to be avoided.... A gentleman in Pennsylvania is much interested in a deaf friend, of whom the physicians say he has but little hope of hearing, "and he has consulted several of the best doctors." It is likely that there is some organic defect that no medicine in the world can touch, but this gentleman asks our opinion of a Mrs. Legget, to which his friend wishes to apply. Mrs. Legget's circular is before us, and it is the same old story, she gives the prescription, but as the druggist may not have the herbs, or they may not have them in purity, she, benevolent soul, who does not want to make money, she says she don't, will put up the prescription for $5. "Chee-Ochee, Prairie foxhoof, Chee monchons, Seed of Prairie Wort," and other such nonsense enter into the prescriptions of this feminine quack....Perhaps of all forms assumed by medical quackery, none are more pernicious than those which assume to be

"UNIVERSITIES," "INSTITUTES," AND "ASSOCIATIONS,"

for under these respectable disguises the worst charlatans gain the ear and confidence (and we may add, the money) of those who would never think of employing an ordinary quack. A great many intelligent people do not know that no respectable physician ever advertises his cures, or ever puts out circulars and pamphlets setting forth his ability to treat particular diseases, or proposes to sell medicines of any kind. Such persons can not conceive it possible that an ignorant quack can have the effrontery to call himself a "University" or an "Institute," and, if they think at all about it, think that the laws would prevent an imposition of this kind. There are in New York and other large cities, quack shops under these high-sounding names, which issue circulars of the vilest kind, which are distributed at the street corners and on cars, to young and old; these are full of matters that children should know nothing of, and they are often advertisements of treatises even more pernicious than the circulars themselves. Some of these so-called "institutes" are regular black-mailing shops. A young man who has, or imagines he has, some private trouble, makes a fatal mistake when he applies to some of these "institutes"; his name, address, and circumstances being ascertained, he is laid under contribution for a certain sum per week, which he pays under fear of a threatened exposure of his case to his parents or employers. A gentleman whose statement can be relied upon, informs us that he has seen such a blackmail list at one of these places, and that the "doctor" received a handsome weekly income thus extorted through the fears of young clerks, students, and others....On other occasions we have referred to some publications of the

CLINTON MEDICAL INSTITUTE,

which are of so vile a character that they were excluded from the mail by the authorities. As Mr. Anthony Comstock, the special agent of the Post-Office Department was chiefly instrumental in putting a stop to the circulation of these documents, the "Institute," which is one James Bryan, calling himself "Doctor," entered a suit against Mr. Comstock in one of the New York courts for attempted blackmail. This Bryan claimed that his institute was an incorporated body, and that there were associated with him in its management, "four of the most celebrated physicians." The testimony given at the trial showed that no other than Bryan could be found or had anything to do with it. Bryan, on his own examination, could give no satisfactory information as to his eminent associates who are claimed in the circulars to be in attendance, he could not recollect the name of the college at which he received his diploma, and made out a very poor story altogether. Judge Donohue in his decision in regard to this "Institute," said: "It seems to me a fair result to reach from the facts presented by the proofs, that the so-called Clinton Institute is a myth, and that the persons whose names are used by it as 'Doctors' are also myths."

Will it Pay?—An intelligent man, having special experience in some department of work, devotes his energies for months, and even years, to collecting information, and after a time he writes out all he can collect of hints, suggestions, etc. Some publisher puts these in type, and prints them in the form of a book, and sells it at a moderate price per copy. Is it likely that any person engaged in the occupation of which this book treats, can fail of getting useful hints out of its pages that will directly or indirectly benefit him many times the cost of the book, even in dollars and cents, aside from the development of thought it will bring? We think there is hardly a book on any practical subject so poor that it will not pay to read it. Certainly there is no good book that will not pay. The value of an acre of land put into a farmer's library, will help the owner to get much more off from the rest of his acres; and every son and daughter who reads books and papers devoted to their calling will respect it more, think more, and be happier. At this leisure season, let every farmer and every mechanic add at least one book to his stock, and read it this winter. It will help during the next busy season. The advertising columns tell of a great variety of books, which the mail will bring to one's door at a mere trifling cost, and nearly all books are sent post-paid by publishers. Look at the various announcements, and select at least one source of new thoughts.

Heavy Weights in Cattle.—Under this head the National Live Stock Journal has some remarks casting doubt upon the estimated weights of the fat cattle raised by Mr. Ayrault, of Poughkeepsie, portraits of which appeared in the *Agriculturist* of December last. The criticism is so clearly erroneous, and the imputation of misrepresentation so uncalled for, that it is only out of justice to Mr. Ayrault that we notice it. The weights of these cattle were only approximately given for the reason that there is a standing challenge for a sum of $500 that the steer and the heifer are the heaviest animals of their kind in the world. On this account "it was said" their weights were not far from 4,000 and 3,000 pounds respectively. Otherwise their exact weights upon the scales would have been given. The authority as to the weight of the Ketton ox is Bell's History of the Improved Short-horn; besides this there are others. All of these state the weight of the ox to be 270 stones (3,780 lbs) or nearly *thirty-four hundred weight*. But then a *hundred weight* in England is 112 lbs. The charge of encouraging misrepresentation is unjust.

Dyspeptics.—Starvation Treatment.—The readers of the *Agriculturist* are aware that its columns are very free from medical advice, as we hold that more harm than good is done by publishing remedies for this and that disease, and encouraging persons to dose themselves. On the other hand we think that hints upon the preservation of health may very properly come within our scope. There is nothing more common than to meet persons who have, or think they have, Dyspepsia. It would be strange, when we consider the general activity of our people, their over-worked brains and under-fed bodies, if dyspepsia were not a common complaint. At all hours of the day many thousands of people are moving on the various railroad routes, and all of them, if they eat at all, must do it at a railroad speed; the trains make up lost time by taking it out of the all too few minutes allowed for refreshments, and travelers have to bolt in the ill-prepared food in the most hurried manner. But it is not the present purpose to point out the various causes of dyspepsia, but to refer to the popular idea that dyspeptics should not eat this or that, if anything at all. True, if the stomach is over-loaded, it should be allowed to rest—but the practice of altogether abstaining from food by dyspeptics is wrong. *Strength comes only from food*, and a weak stomach needs food to make it strong—and this should be good nourishing food, and not grits, bran, and such articles alone. A beefsteak cooked rare and *thoroughly chewed*, with good bread, and baked or mashed potatoes, is better for a dyspeptic than all the "bitters" and other medical nostrums ever invented. If the teeth are imperfect, and can not thoroughly perform their duty, then the meat should be cut very fine to the better prepare it. The "bitters" may produce a more immediate pleasant sensation, but good food will tone up and strengthen the stomach for the

next meal, which should be taken after the preceding has been digested, and the stomach allowed to rest a little, but before it is weakened by starvation again. If one is very weary, and the stomach weakened by long delay in eating, a light meal should be taken; a heavy meal will overload it in its exhausted condition. Good palatable food, in fair quantity, eaten at regular times, and with sufficient moderation to secure its proper mastication, is vastly preferable to all medical nostrums, and to fasting and starvation. The writer speaks from knowledge gained by experience and a study of the principles involved—a knowledge, which, had it been acquired and appreciated 40 years ago, would have saved him some suffering at least, and have made him worth much more now for the remainder of his life's work.

A "Mystery" Explained.

More than one reader has written to us to the following effect: "From what I know of the cost of good paper, of fine engravings, well printed, etc., I can well understand that at the low price of the *American Agriculturist* there can be little, if any, profit. It is then a mystery to me how the publishers can offer such premiums as they do to those who obtain clubs of subscribers, unless these articles are affairs or poor selections." There is no "mystery" about it that we are unwilling to explain. **First,** the money received for advertisements properly pays the premiums; the premiums help to increase the circulation, and more circulation brings in more advertising money. **Second,** manufacturers well know the carefulness of this journal in commending nothing but the best, and that to be recommended in this journal is the highest testimonial they can have. Hence, most manufacturers are ready to give the publishers extraordinary terms for such articles as they give as premiums, and generally to accept part payment in advertising. This enables the publishers to pay two or three times as much in premium articles as they could possibly pay in cash, while the articles given *are just as good as money* to the recipients, or even better, for they come with a guarantee of their quality. So it is a good thing all round, for the manufacturers, the publishers, and especially for those who receive the articles, as they get good things for using the little time and effort required to raise a club. Multitudes of them have written their great satisfaction on receiving these articles, and more than **15,000** persons have received them. Still further, it is a good thing for the subscribers in the premium club, as they are induced to supply themselves with good reading, and the club raiser saves them all trouble of remitting the subscriptions. **Finally,** let us repeat that every article in the premium list is warranted *first rate*. (Hundreds of second-class articles are pushed upon us for our premium list every year, but all such are rejected.) Our own reputation is at stake, and even were we so disposed, we cannot afford to give any but good articles. **Lastly,** we ask all our readers to look over the Illustrated Premium List and descriptions. (If any one has failed to receive a copy, please write at once for one, which will be sent free.) There are many good things that any one can get without cost during these winter months. You want them, and we like to give them, and you can easily get them.

Those "10-Cent Postage" Complaints and Other Matters.

Constantly, for five months at least, the publishers have announced, that on and after January 1, 1875, *they* must prepay the postage on all papers mailed. Subscribers had previously paid 12 cents a year. The Publishers will have to pay 10 to 12 cents, according to the number of extra pages added during the year, as they pay by the gross weight. Still many old subscribers, and some new ones, partly from long habit, send us in only the old subscription rates, without the postage. To such a postal-card is forwarded, stating the omission, and occasionally this is complained of rather bitterly as a "small matter." So it is, in individual cases—"only a dime"—but to the Publishers it is a large affair—a matter of $10,000 on a hundred thousand subscribers! Some publishers of high-priced papers and magazines make considerable display of liberality in offering to prepay all postage. They can easily afford it, having a large margin of *profit* to take it out of, but with this Journal it is quite different. It has **44** pages of more than double the size of ordinary magazines, and is printed on firm, sized paper, of as fine a quality as ordinary writing-paper. The paper is made of strong rags, not of straw and clay that fall to pieces in use. The engravings are finely cut, and are not rapidly thrown off ink-daubs, but are slowly, carefully, and expensively printed. The preparation of the reading matter is expensive, because in the wide range of topics, many first-class men are required to investigate. A few lines are often the result of many hours of investigation, and multitudes of articles and items are left out, because laborious investigation has thus decided. There are not half a dozen monthly journals or magazines in this country, even of those sold at $4 and $5 a year, and but very few weekly papers, which are got up with so great care, investigation, labor, and expense, as are put upon the *American Agriculturist*, notwithstanding its low popular rates of $1.60 a year, including postage, while it is supplied to large clubs even as low as $1.10 a year, including postage. The reader will, therefore, readily see the necessity the Publishers are under to require the postage to be paid by the subscriber, or in other words, of increasing the price enough to cover the cost of paying this. The annual terms (*postage included*) are: One to three subscribers, $1.60 each; four to nine subscribers, $1.35 each; ten to nineteen subscribers, $1.30 each; twenty *or more* subscribers, $1.10 each.

A Catalogue, a Book, and a History.—Among the numerous florist's catalogues which have been recently received, is one from Long Brothers, Florists, Buffalo, N. Y. The catalogue of this establishment last year, showed much originality in its arrangement, and the one issued the present season, is not a mere copy of the preceding. One of the brothers, Mr. E. A. Long, has also issued a neat little work of 88 pages, called "The Home Florist," which gives descriptions of popular flowers and the methods of cultivating them, with a great deal of matter useful to the novice in flower gardening, all for the small sum of 30 cts.; an examination of the work shows that the author has a practical knowledge of plants and their culture, and the ability to impart this knowledge to others in a clear and instructive manner. Both the catalogue and the "Home Florist," are specimens of good and careful work. A number of months ago the Editor received from Long Brothers, a letter, stating that they were young men, trying to make their way as florists, and asking advice upon various matters relating to their business. The young men were perfect strangers, but they seemed to have so much confidence in our opinion, and expressed themselves so frankly, that the correspondence which grew out of this beginning, was of a much more friendly character than that which relates to business matters usually is. It at length appeared that these gentlemen attribute not only their success as florists, but the fact of their being florists at all, largely, if not entirely to the *Agriculturist*, and that while we were looking at their correspondence as that of business men, whose enthusiasm and freshness made it more than usually interesting, they felt all the while that they were conferring with an old friend and benefactor. Mr. E. A. Long, who though not the oldest of the four brothers, was the one who first became a florist, gives us a brief history of their establishment, which we here publish for several reasons, but mainly for the encouragement of other young men. Not to induce young men to become florists, for it is not desirable that they should, unless their tastes strongly lead them in that direction, so much as to induce them to become *something*. These young men, the oldest not get 28, have built up a handsome and growing business out of nothing save what is within the reach of every young man who reads this, provided he has within himself the necessary will and energy. It is so frequently that we receive letters in which the writer attributes his success in some special undertaking, or even his whole success in life, to the teachings of the *Agriculturist*, that we have perhaps come to look upon them as matters of course. It is certainly most gratifying to know that our work in the world is for good, and while we have received the testimonials to this fact, with much inward satisfaction, we have regarded them as confidential. This of Mr. Long comes with full permission to publish, and we give it not only for the pleasant light in which it places our own labors, but as showing what energetic and persevering young men these brothers are, and how well they deserve the success which has thus far attended them. We have another reason for publishing this letter. When the panic of the fall of 1873, deprived papers which had heretofore given premiums, of the ability to do so, they all at once became distressingly virtuous, and at the opening of 1874, discovered that the whole system of premium giving was wrong; their paper was so good that people needed no inducements to work for it, and most of those at the beginning of 1875, hold the same exalted views, though we notice that their journals do not improve in value. Of course, these publishers have a right to manage their business in their own way, but we do not think it fair in them to sneer at those who choose to do differently. The *Agriculturist* many years ago, inaugurated the paying of premiums to those who worked to extend its circulation, and has increased the number and value of these from year to year. We should not have continued to do this, had we not found some good came of it; aside from the benefit it has been to ourselves, we know that hundreds if not thousands of young men in the country, date their success in life from working for these premiums.

But we will allow Mr. Long to speak for himself: "I formerly canvassed for the *Agriculturist*, and remember having one year sent in a club of 64 names, gathered in our neighborhood (I was 17 then, I think), with somewhat smaller clubs in preceding and following years. My first premium was "Worcester's Unabridged," next a gold pen and silver case, next $40 worth of excellent books from your list; after that a few implements, other books, etc. This was about ten years ago, and I shall never be able to fully ascertain the great advantage of the early business schooling I derived from devoting my spare evening time mostly in soliciting subscribers to your journal. Besides this I was able to gratify a desire for information on horticultural art and science by procuring the best of books on these subjects without cost, at a time when I was without means for purchasing, and I can not tell how valuable this has been to me since I subsequently engaged in business as a florist. About eight years ago, as a then successful amateur florist, I commenced the cultivation of greenhouse plants in one end of a propagating house, built by my father for nursery purposes at Williamsville, ten miles from Buffalo. My purchases in the first year to stock "my greenhouse" amounted to less than $15 worth. From the first I was successful, both pecuniarily and otherwise, although almost wholly dependent for my guidance on my "premium" books, the *Agriculturist*, and the knowledge I had been and was constantly gaining by experience. I increased my greenhouse stock considerably in the next few years, and about this time made arrangements for spending, and did spend, the better part of a year in Mr. Peter Henderson's employ. While I was there I gave directions by mail to some younger brothers at home, who had become somewhat initiated in working with me, for propagating and managing my stock. After I returned home, and ever since, my brothers and myself, with very limited capital, have been pushing the florist business with eagerness. A little over two years ago we located ourselves at Buffalo. This was a capital move, as Buffalo, like hundreds of other places, had been poorly supplied with florists. We at first issued a price-list, and then a catalogue, which we have done now for six years. We have acquired something of a shipping trade, and on the whole are astonished at our general success. Four years ago (1870) at Williamsville (marketing in Buffalo), my sales of florist plants amounted to $150. In 1871, also at W., $700. In 1872, at W., with some shipping trade, $3,200. Last year (1873) at Buffalo, $6,700, and for the present year (1874) our sales of florist stock will reach near $11,000. All this time I and my three brothers have done nearly all our own work. It is with a deep sense of gratitude that I say, that without a doubt our attainments in our business are almost wholly due to my having interested myself in the advantages you offered to the young as well as old, in devoting their spare time to working for the reliable, old *American Agriculturist*."

Gardening for the Prophets.—Deacon —— is a ruling elder in one of the leading churches of ——. Being on a visit to Chicago, he was commissioned to get a work on the Prophets for the use of the Sunday-school in which he was a teacher. On the Sunday in question the Deacon was absent, but was represented by his eight-year old boy, of whom the superintendent asked if his father had brought that work on the Prophets; the youngster promptly replied yes! I know he has, and he has been reading it all day. I know it is the book, for I saw on it "Gardening for the Prophets," by Peter Henderson. The story spread and was rather hard on the Deacon, who had heretofore, as a Deacon should, set his voice against all secular reading on the Sabbath.

The Catalogues.—Our friends are slow in getting out their catalogues, or at least slow in sending them. A list of those received was made up at the usual time, but by the time this was in type, others came to hand in such numbers, that it was not possible to get them all into the present number. We therefore defer the whole list until next month. We would therefore suggest to those who wish to have their catalogues enumerated, to send them along early. We try to avoid all partiality in this matter, and it is not our fault if the catalogue of a dealer fails to appear.

Basket Items continued on page 73.

The Horse's Foot.

Few persons who own and use horses, are aware how delicate an organ is the horse's foot. Not many blacksmiths or farriers, upon whom almost solely depends the preservation of the foot, are acquainted with its structure, and its sensitiveness.

Fig. 1.—LONGITUDINAL SECTION.

To most people, horse-shoers included, the hoof is a piece of insensible horn, that may be cut and hacked, rasped and burned, bound with iron and nails, or bruised and pounded upon stones and rough roads with impunity. This want of knowledge results in frequent and incurable ills to valuable horses, involving suffering to patient beasts, and much pecuniary loss to their owners. The horse's hoof is a complicated structure of bones, cartilages, and sinews, wrapped in the most sensitive and delicate membranes, bound together in a mass with fibrous tissue, and abundantly supplied with blood-vessels and nerves; all of these are enclosed in a thin case or box of horn, the crust of the hoof; with which, however, all these are intimately connected, and interwoven by a system of several hundred acutely sensitive laminæ, or thin leaves or plates. Hence an injury or blow given to the outer crust of the hoof conveys a sensation to every interior part of the foot, and thus impresses the whole nervous system of the animal. A clearer idea of the character of the horse's foot, may be gathered from the illustrations, taken from a recent work, "Chauveau's Comparative Anatomy of the Domestic Animals."

Fig. 2.—HORIZONTAL SECTION.

Figure 1 is a section from above downwards through the foot, in which at *a*, is seen the lower portion of the first phalanx; at *b*, the second phalanx; *c*, the navicular bone; *d*, the plantar cushion; *e*, the third phalanx; *f*, the plantar surface of the hoof, and at *g*, the sensitive membrane of the third phalanx. Figure 2 is a section across the foot, and shows at *a*, the toe of the hoof; at *b*, the thickness of the walls; *c*, the sensitive laminæ or leaves, which connect the wall of the hoof with the inner nervous and vascular system; *d*, is the insertion of the tendon by which the toe of the hoof is extended, (the *extensor pedis*); *e*, the *os pedis*, third phalanx, or pedal bone; *f*, the navicular bone; *g*, the wings of the pedal bone; *h*, the lateral cartilages; *i*, the tendon which retracts the foot, (*flexor pedis* tendon); *j*, the plantar cushion; *k*, the bars or the inflexion of the wall of the hoof; *l*, the horny frog.

Fig. 3.—LOWER FACE.

Figure 3 shows the lower surface of the foot, after the outer crust of the hoof with the sole has been removed. At *a*, is the heel; *b*, the coronary cushion; *c*, part of the plantar cushion; *d*, portion of the frog; *e*, laminæ or leaves of the bars, and *f*, the velvety tissue of the sole. Our purpose is not to explain the offices of these organs, but simply to exhibit and enumerate them to enforce the necessity of a thorough study of the horse's foot, in order that proper and intelligent care may be taken of it. In nothing is educated skill more necessary than in shoeing. It must be remembered that the foot is continualy growing from within outwards, to repair the constant loss of the hoof by wear; that nature has provided for every need that may arise from the natural wear of the hoof; that the outer surface of the hoof is of dense, tough, elastic, insensible material—horn—although it is intimately connected with a most sensitive interior, and that the real purpose of shoeing is to provide against an excessive wear of the crust, occasioned by contact with stones and rough surfaces upon roads, to which the animal in its wild state is a stranger. The shoe, in fact, should be an artificial crust to the hoof, and while it should be no less, it need be no more. It should not change the position of the foot with regard to the ground, nor elevate it so that the frog can not come in contact with the ground. It should not bind the foot with a rigid ring of iron, so that the elastic crust can not spread when the weight of the horse falls upon the elastic cushion within, and thus prevent the exercise of one of its most useful functions, viz., that of a spring to relieve the pressure, and prevent jars which would otherwise be conveyed directly to the bony column of the limb. These are some of the rudimentary principles of a rational system of horse-shoeing. Upon the form of the shoe greatly depends whether these principles can be carried into practice or not. The Goodenough shoe, of which fig. 4 is an illustration, is designed for this rational system of shoeing. It is light, having no surplus weight to encumber the foot. The foot surface is rolled with a bevel, by which the shoe bears only upon the wall or crust of the hoof, entirely relieving the sole from pressure. The ground surface has also a bevel by which the inner part of the shoe is brought to a thin edge. The outer portion has a thick edge cut into calks, by which secure foot-hold is obtained, without elevating the foot and without changing the natural bearing of its surface. To apply the shoe to a horse's foot, no preparation is needed further than to level the surface of the wall of the hoof, to get an even bearing, and to remove unnecessary worn-out horn. The frog under this system is never touched by the farrier's knife. It comes to the ground as it naturally should, and performs its proper office in supporting the inner organs of the foot, as a spring or cushion. No greater recommendation of this form of shoe, or of the system of shoeing here advocated, can be furnished, than that several of the largest horse-railroads of New York and Brooklyn use it, and have used it for years with satisfaction and success; there can be no severer test than this. Several farmers of our acquaintance, whose judgment is unquestioned, have long used this shoe and continue to use it.

Fig. 4.—FOOT WITH SHOE.

A New Squash.—The Butman.

Several years ago, in a correspondence with our friend Jas. J. H. Gregory, of Marblehead, Mass., we had some jocular remark about titles; he stated that he did not care about M.D., L.L.D., and all the rest, it was sufficient honor for him to be known as "The introducer of the Hubbard Squash." If honors are in proportion to the merit of one's deeds, then it is a high honor to have introduced the Hubbard, for its good results were felt all over the country, and the whole people have enjoyed an article of food, vastly better in every respect, than anything of its kind they ever had before. But Mr. Gregory is not one to repose on his laurels, as good as the Hubbard was, he showed us that the Marblehead was better, and now he comes with the Butman, which is—shall we say it?—better than either or both. Some weeks ago there came to our office a box, containing numerous halves of squashes. Coming from New England, where they draw their poultry for market, we admired the forethought, which eviscerated the squashes—*probably* to keep them from spoiling on the way. (N. B.—Mr. G. is a *seeds*man.) These squashes, or parts thereof, were distributed to several for trial. The trial was an impartial one, and the unanimous verdict was: guilty—of being the best squash the jury ever tried. We tested it alone, and in comparison with the Hubbard, and deliberately pronounce it the best squash we have ever eaten—dry, fine, sweet, delicious. The engraving shows the shape of the Butman, which is much like that of the Hubbard, and it is said to be similar to that in productiveness; it however differs in color, it being of a bright green, intermingled with white; some of the specimens might be described as white, mottled with green; in external color it is very distinct and striking; it has the thick shell of the Hubbard, and is thick-fleshed, the flesh being a very lively light salmon color. Mr. Gregory says that it keeps equal to the Hubbard, but is in its prime from October to January. This variety was originated by Mr. Clarendon Butman, of Maine, who produced it by crossing the Hubbard with a Japanese variety, and by several years of careful selection and crossing, he has succeeded in establishing a distinct variety, in which the good qualities are permanently fixed. According to Mr. G. all our standard varieties of squash originated abroad, and this is the first instance in which a purely American variety of squash has been produced. We congratulate Mr. Butman upon his success, and at the same time give our sympathy to Mr. Gregory, as he has slight chance of introducing another squash that shall be better than all that preceded it.

BUTMAN SQUASH.

Connecticut Farmers' Convention.

An important gathering of the farmers of Connecticut, under the auspices of the State Board of Agriculture, was held at Woodstock, Dec. 15–18, at the invitation of the Agricultural Society of that town. The leading farmers of the State were well represented by nearly a hundred earnest, enterprising cultivators. Morning, afternoon, and evening lectures or reports were arranged, and each lecture and report was followed by a lively discussion, in which those present well filled up the time with conversation, asking and giving information. Dairy topics, as milk, butter, cheese, milking value of different breeds of cows, kinds and quantities of feed, occupied most of the time. Well prepared and generally instructive papers were read by Messrs. T. S. Gold, N. Hart, Dr. E. L. Sturtevant, Hon. X. A. Willard, of Little Falls, N. Y., and Hon. F. D. Douglass, of Whitney, Vt., while discussions on dairy topics were led by Messrs. S. M. Wells, Wm. Clift, and Hon. Albert Day, and participated in by many others. Prof. W. O. Atwater gave an extended and interesting lecture on late European experiments on the relation of fodder and milk production. There was a fine exhibition of apples, and a paper on the Orchards of Connecticut, with suggestions on raising and keeping fruit, by Mr. P. M. Augur, Pomologist of the State Board of Agriculture. The Committee on Agricultural Experiment Stations reported their efforts toward getting a Legislative appropriation, and were desired to continue their efforts until they achieved success. Several hundred dollars were subscribed to make a beginning, as noted elsewhere. We trust the Board will issue in pamphlet form, and adapted to general circulation, a pretty full resumé of the information brought out during the meeting, and stereotype it, so that they can multiply copies, and put a small charge upon them, when others outside the State can feel free to send for them to the Secretary, T. S. Gold, at West Cornwall, Ct.....

By invitation of the farmers of Windham County, the writer spent most of the winter of 1852-3 in several towns there, lecturing and holding agricultural meetings nearly every night for a dozen weeks, and it was gratifying to meet at Woodstock several of his auditors and pupils in agricultural science, some of whom he had not seen personally in the intervening 21 years, though he has held converse with them from time to time through the columns of this paper. It was gratifying also to learn that the spirit of investigation, then developed, has not died out, but that the farmers of Old Windham are as wide-awake to improvement as ever.

Cotton Seed as a Fertilizer.

Cotton seed is valuable for the ammonia, phosphoric acid, and potash it contains. Applied alone it is less effective as a fertilizer, than in compost; the most economical method of utilizing it is as feed for stock, the manure from which has a very high value. Until the system of cultivation generally followed in the Southern States, is greatly changed, the whole value of the cotton seed can not be attained. The plan of composting must therefore be taken as the next best method of using it. There are several ways of doing this. The seed may be thrown into the stable and trodden by mules, and made to mingle with their droppings. As it is removed from beneath the animals, it should be thrown into heaps along with all the trash and weeds from the cotton and corn fields, and such other refuse vegetable matter as can be gathered. These heaps will rapidly heat and ferment, and will need frequent turning to prevent burning or "fire fang." A mixture of swamp earth will help to prevent injury from this cause. Some labor in the preparation of this compost, will be amply repaid, as it will be worth, if well made, at least $15 to $20 per ton, taking guano as the standard. The quality of the compost will be further improved by adding some good phosphate or plaster, or both. The difference in the value of raw seed, and that composted in the way here described, is illustrated by some experiments made last season, by a planter in South Carolina. Raw cotton seed at the rate of 35 bu. per acre, were put into the drill, upon soil of medium fertility, and covered in February. Early in April the beds were made up, and cotton was planted. With good culture the crop yielded was 100 pounds of seed cotton per acre. Upon another piece of ground, 125 bushels of raw seed were scattered broadcast, the land was plowed, bedded, and planted at the usual time. Only 70 pounds of seed cotton per acre resulted. Another piece was manured with a compost equivalent to 20 bushels of cotton seed, 50 bushels of cow pen manure, and 125 lbs. of phosphate of lime per acre. The yield was 1,000 lbs. of seed cotton per acre. From the absence of any regular system of stock feeding, in connection with farming or planting in the Southern States, it is impossible to determine exactly what would be the result, if cotton seed were used as a feeding material in connection with hay or straw, corn-fodder, or such roots as could be readily grown in the South, as beets for instance. But as the refuse cake from the cotton seed oil manufactories is largely used in England as cattle feed, for the express purpose of enriching the manure, with profit, there is no doubt that it might be profitably used here in the same way. That by the use of some capital in the purchase of lean stock from the West, and the growth of fodder crops upon a considerable portion of the land now devoted to cotton, a sufficient supply of rich manure could be procured, whereby an equal product of cotton to the present, could be raised upon the remainder of the land, can hardly be doubted. The condition of Southern farmers is not favorable for experimenting. Their whole attention is necessarily given to making crops for profit. To experiment successfully, requires time and some expenditure that may give no present return. But in no part of the country is improvement in agriculture more needed, than in the Southern States, and in none is a richer reward offered for improvement. Agricultural Colleges have opportunities for experiments, and we can not conceive of a more hopeful experiment than such a one as this, to be undertaken by some one of the Southern Agricultural Colleges.

Experiment Stations.

Their Value and Importance to American Cultivators.—A Beginning to be Made Here.

We call special attention to the articles of Prof. Atwater in this and the previous number of the *American Agriculturist*. The subject is of the highest importance. Science can be of immense service to the farming interest of our country. There is a good deal of prejudice against science among practical men, nor is this surprising. It is but a few years since the first successful attempt was made to call science to the aid of the farmer. Enthusiastic novices, encouraged by the first gleams of light, were carried beyond the bounds of reasonable expectation, and claimed too much. Charlatans seized upon a few striking discoveries, and perverted them to personal ends, and by frauds in fertilizers, and in other ways, gave unlearned men good reason to stand aloof, and even to cry out "humbug."

Meanwhile careful, honest investigators have kept quietly at work. During a score years or more past, valuable discoveries have been accumulating, and to-day science is a positive and valuable help for the cultivator of the soil. Prof. Atwater's future contributions will give us some of the results obtained by our careful, painstaking German brother farmers, that will be of great use to us. But we want to have investigations here. We need Experiment Stations, not only to reduce to our use the knowledge obtained abroad, but to make *new* investigations, specially adapted to our soil, climate, and condition. We don't want merely the puny political machine run at Washington in the interest of personal favorites of the administration of whatever political party happens to be in power. We want Experiment Stations among farmers, managed solely in their interest by men of integrity and common sense, having thorough scientific knowledge and practical skill as well. Such men are scarce as yet, but a demand will bring them out. Connecticut is favored with two such men—Prof. S. W. Johnson, author of the well-known books "How Crops Grow" and "How Crops Feed," is one of the first living authorities in Agricultural Chemistry, and as Chemist to the State Board of Agriculture has been more than any other man a pioneer in introducing agricultural science in this country. Prof. W. O. Atwater, formerly a pupil of Prof. Johnson, has more recently devoted much time to investigations in Europe, and he is doing good service in bringing before our farmers the information there gathered.

At the recent Connecticut State Farmers' Convention, referred to elsewhere, the committee appointed at the previous annual convention, to secure from the Legislature an appropriation for an Experiment Station, reported progress, and it is confidently hoped that the next Legislature will provide for an annual grant of the necessary funds. But the farmers present, feeling the need of work immediately, determined to make a beginning themselves at once. We have only space to say that several hundred dollars were promptly raised at the Convention, and it is expected that this sum will be largely increased. The use of the large, new, and convenient laboratory of the Wesleyan University was offered free of charge, as were the services of Prof. Atwater, with the advice and aid of Prof. Johnson in superintending the work. With competent assistance, as much as the funds subscribed will allow, the work of analyzing fertilizers will be commenced immediately. A very important addition to the good work done in this line by the Board of Agriculture, through its chemist, will thus be made. It is proposed not only that the fertilizers offered for sale in the State shall be tested, as is done by the Board of Agriculture, but also that analyses shall be made for farmers and others, who wish to know the value of the fertilizers with which they are dealing. With the aid of the subscription referred to, it will probably be practicable to make analyses for $2.00, that would otherwise cost $20.00 or more. Other investigations of interest to agriculture will be made, and information will be given freely, so far as the time of the chemists will permit.

By chemical investigations of manures, and by experiments on the nutrition and growth of animals and plants, hundreds of thousands of dollars are saved to European farmers every year, while the higher benefit of this, as of every other form of true science, is priceless. To this most worthy effort in our own country, we most earnestly wish the most abundant success.

Sheep-Raising in Virginia.

BY THOMAS WALSH, ALEXANDRIA, VA.

[An article in the *Agriculturist* for November last upon sheep-raising in Virginia, has called forth a letter from Thomas Walsh, Esq., of Burgundy Stock Farm, near Alexandria, which should have been published in December, but was crowded out. The article referred to was by one of our associates, who was in Virginia on a tour of observation, and was based upon information gathered a long distance from Mr. Walsh's farm. We gladly give place to Mr. W.'s note, as it confirms our view that sheep-husbandry in some form is the great reliance for the restoration of a now rather desolate region. We have no doubt that Mr. Walsh's farm, within two miles of a good market, is much cheaper at $80 an acre than the old fields 50 miles inland, at a tithe of the money. But Virginians, or those who seek new homes in the old State, cannot all live in the valley of the Potomac. The people who are already scattered through the poorer sections of Fairfax, Fauquier, Prince William, Culpepper, and Orange Counties, must live, and if they are not able to buy sheep at $3 or $4 each, it would

probably be better for them to buy sheep at half the price and worth but half the money, rather than buy nothing at all, and keep on in the old routine. In so broad a district as that lying between Alexandria and Gordonsville, there are not only different grades of sheep, but different prices for those of the same intrinsic value. Lands are higher, and the cost of production is greater, near good markets than in remote districts. The estimate of $1.50 for sheep in the season when second-rate animals are cheapest, was made by our informant for the benefit of that class who have small capital and little enterprise. It is a great thing for a land-poor, discouraged, farmer, to show him that there is a way out of his difficulties, and that he can hope to improve his condition. It is not likely to mislead men of larger intelligence and capital, who know that the best stock at any reasonable price pays much better than inferior stock at the market price. Mr. Walsh is right in choosing the best lands and the best stock at high prices near a good market. The poor fellow in the back country may not be altogether wrong, who buys a poorer article at low prices, and tries his hand at sheep-husbandry. We cannot speak too highly in commendation of Cotswold rams in a flock of mutton sheep.—ED.]

Mr. Walsh writes: "I saw in the November number of the *Agriculturist* an article on sheep-raising in Virginia, and knowing the influence and wide circulation of your paper, I thought it might lead some person astray in regard to land and sheep in that part of Virginia. First, you can not buy any land for five or six dollars an acre worth owning. It would be cheaper to pay twenty-five. The writer paid $80 an acre on the same road, two miles from Alexandria, and bought 281 acres, and he would not sell it to-day for twice the amount. Next, no man can buy any sheep worth having for $1.50 a head one hundred miles from here. I tried it, and came back to Alexandria and paid $3.50. It is far better to pay $3 or $4 for good young ewes than to buy poor old ones for $1.50 or $2. The lambs will be better, and when the lambs are sold it will be easy to fatten the ewes. I paid $4 each this fall for 70 ewes, and I consider them cheap. Good ewes will have lambs early, and there is where the profit lies. Good lambs sell in Washington in the spring for $5 to $6 at ten weeks to three months old. I got $6 for lambs the first of last April, at nine weeks old. I have two fine Cotswold rams, and also a Leicester ram. They are fine; I paid $30 apiece for them. As the writer says, I believe sheep-raising is the only thing that will pay at present. Unless you have a very large flock, say 500 or 600 sheep, it will not pay to have a shepherd. I have 110, and take care of them mostly myself. In winter I feed principally bran and ship stuff, occasionally corn. In early fall I sow a field of rye, so as to have it for my ewes and lambs early in the spring. I keep my sheep out every day in the winter, unless the snow is deep. At nights I keep them in open sheds. This is my third year with sheep, and I have lost none so far, by dogs. Sheep do well here; I sell the old ones in May and June, and buy afresh in the fall. Being a new farmer, and a resident of Brooklyn for 21 years before I came here, your valuable paper has been the means of giving me these last five years a great deal of useful information which I needed, and am thankful for.

Farming Without Manure.

The remarkable results obtained by two English farmers, Messrs. Prout and Middleditch, were recorded and commented upon by the various English papers, especially those devoted to agriculture. In December last, we gave under the above title, an abstract of the first accounts which came to hand, but journals received later, showed that the article upon which our comments were based, was not as full as it should have been, and we were about to make a revised statement of the case, when there came to hand a letter from J. R. Dodge, Esq., the capable statistician of the Department of Agriculture, who will, we trust, excuse us for making use of a portion of a private letter, for the good of the public. Mr. Dodge says: "Last season I visited the farm of Mr. Prout, at Sawbridgeworth, Essex, saw his more than three hundred acres of growing wheat, and the piles of superphosphate and ground bone that are annually applied to the soil, and took abstracts of statistics from his record of the farm, which corroborated the statements from his own lips, that his average annual expense for fertilizers, was fifty shillings, or $12.50 per acre, for 4 or 5 previous years. It is true that he does not use manure of cattle to any great extent, as he keeps none for fattening, but has a few horses and pairs of oxen for hauling, and all light cultivating not done by steam. He plows eight or nine inches in depth, stirs the soil six or seven inches deeper, cultivates his crop once or twice in the spring by horse-plowing, and afterwards weeds by hand.

"The reported gross income of the present year, $23,141, is about the average shown by his books for the four previous years, and while the annual cost of fertilizers is about $5,000, the net profit averages $6,000, after allowing eight per cent on £50 per acre in lieu of rent.

"The wheat crop is always disposed of by auction, grain and straw, as it stands in the field. This practice, disregarding turnip culture and cattle feeding, is indeed anomalous in England, but Mr. Prout is willing to continue it while it brings annually 35 to 65 bushels of wheat per acre, and a net profit of $12 to $15."

Ogden Farm Papers.—No. 60.

BY GEORGE E. WARING, JR.,

I have long thought that a part of one paper of this series might be advantageously directed to some of the details of the sanitary arrangement of farm-houses as to any other winter topic, and surely no other is of nearly so great importance. Health, so far as it is affected by proper arrangements for disposing of refuse or organic matter, is more dependent upon the direct intervention of individual householders in the country than in towns. On a farm, the circumstances and conditions under which the family live are entirely, or almost entirely under the control of the farmer himself, while in towns every one is more or less affected by the circumstances attending his neighbor's mode of life; therefore, while calamities befalling those in towns may be to a certain extent beyond their individual control, much of the death and disease from which the farmer's family suffers, results from causes for which he alone is responsible, and which he might have removed. Nothing is more common than for every death and every case of sickness to be ascribed to the workings of an inscrutable Providence. By far the greater proportion of the affliction to which mankind is subject, comes not by the act of God, but by the act of man himself. The range of what is called preventable diseases is now known to be very wide, and all such diseases it should be the first duty of man to prevent. Much of this—that to which I especially wish to ask attention—is not only preventable disease, but is disease that is called into existence only by the act or by the neglect of man, and it is not too much to say, (after the thorough investigations of the subject that have been made by sanitary authorities), that there has never been a case of typhoid fever that was not almost directly caused by the ignorance, or by the criminal neglect of some person whose duty it should have been to prevent it. Such disease never comes without cause, and its cause is never anything else than organic poisoning arising from decaying organic matter, or from the spread of the infection directly from a patient suffering from the disease.

Typhoid fever has many names, all of which are suggestive of its origin. It is called "drain-fever," "sewer-fever," "cess-pool-fever," "foul-well-fever," "night-soil-fever," etc., and it is *never* caused except by the introduction into the system of the germs of the disease—which can originate only through the operation of neglected organic wastes, or by communication through the lungs or stomach by means of foul air or foul water, or of germs arising from the persons or from the excreta of typhoid patients. So far as its contagion is concerned, ample ventilation of the sick-room, and the immediate removal or disinfection of the fæces are ample preventives. It is not contagious as small-pox is, but its spread is caused by the action of germs which infect the locality of the patient, and extend more or less widely according to the precautions used to confine it. There is not necessarily the least danger that the disease will attack even the constant attendant of the patient, if proper care is taken. This part of the subject may, perhaps, be left to the control of the physician who has charge of the case; but with the farmer himself must rest the entire responsibility of the *origin* of every *first* case breaking out in his household. This is a certain and thoroughly well-established fact, and there attaches to him the full measure of guilt for every such case. This is a responsibility for which the community should hold him strictly accountable. It would really be as correct to ascribe a red-handed murder to Providence as to attempt in this way to console ourselves for a fatal attack of typhoid fever. We are taught that we shall not cleave our child's skull with an ax, and that if we do, death will surely result, but we are no less absolutely taught that we shall not poison our child's blood with the foul emanations of our house-drains, and with the contamination of our drinking-water wells, lest the same fatal result follow. We may ignorantly load the water with which our families are supplied with lead-poison, and so be without the guilt of intention; or we may ignorantly poison our wells by the infiltration of infected organic matter, and in this case, as in the other, be acquitted of the charge of criminal intent. But in these days, when so much has been published concerning the origin of diseases of this class, however free we may be of all criminal intent, the serious charge of criminal neglect must surely lie at our door.

Now, all this may seem very savage talk to put into a paper intended for the perusal of the intelligent farmers of an enlightened country, but any one who will give attention to the subject, will confess that it is precisely the sort of talk which is most needed, and which, if well heeded, will produce the most beneficial results in every quarter of the country. There are other diseases, resulting some in death and some only in illness and its consequent loss of service, which come more or less under the same head, but typhoid fever is so universally prevalent in country-houses, is so fatal in its effect, and is so readily prevented, that it constitutes the most conspicuous type of its class, and is most entitled to consideration. It may be assumed, without hesitation, that whenever a pronounced case of typhoid breaks out in an isolated country-house, or when any form of low fever occurs, though it may fail to assume a distinct typhoid character, there is in that house, or about it, or in connection with its supply of drinking-water, some accumulation of neglected filth, some pile of rotten vegetables in the cellar, some overflow from a barnyard, some spot of earth saturated with the slops of the kitchen, or some other form of impurity to which the origin of the disease may be distinctly traced. The *spread* of typhoid is very generally occasioned by germs contained in the bowel discharge of fever patients, but the disease is constantly originating itself where no such cause exists, and every first attack is a plain indication that either at home, or in some house at which the patient has visited, one or two things has occurred: (1) there has been an exhalation of poisonous organic gases from a privy-vault, from a kitchen-yard, from a neglected cellar, or from some other source of bad air, which has entered the lungs and planted there the germs of the disease; or (2), either in the food or in the drink of the patient, these germs, originating in the same organic putrescence, have found their way to the stomach. In either case the blood is attacked; the subject may have been sufficiently robust and vigorous, or sufficiently unsusceptible to infection to have avoided a

serious or fatal illness, but in every instance the danger has been incurred, and, when incurred, the risk must be the same as in taking any other form of slow poison. This is not theory, but simply a well established fact demonstrated by long, careful, and frequently repeated investigation. The precise character of typhoid infection, and the exact manner of operation when introduced into the blood, are not known, but that it always originates in the way described, and that it may invariably be prevented by the use of proper sanitary precautions, is absolutely known.

This being the case, it lies perfectly within the province of every farmer, (and if the farmer will not attend to such matters of his own accord, his wife has a way of urging him into it), to remove while it is yet time, any source of infection to which his house may be liable. Vegetables, in any considerable amount, should not be kept in the house cellar, and at least once a week the floor of the cellar should be swept, and every shred of waste vegetables removed. Even when this is done, the cellar should be ventilated by a window or other small opening toward the quarter least exposed to cold winds, (and in summer on every side); the privy, if a privy is used, should be well away from the house, and especially far from the well, unless its contents are received in a tight box, and entirely absorbed by dry earth or ashes, and even then frequently removed; the chamber-slops of the house should *never*, under *any* circumstances, be thrown into the privy vault, nor into a porous cess-pool, from which they can leach into the ground, and through the ground for a long distance into the well, and into and around the foundation of the house; the same disposal of the liquid wastes of the kitchen is desirable, but not so absolutely important. It is, however, important that this should be led by an imperviable drain to a point well away from the house and from the well; swill, and all manner of nondescript refuse material, such as is sloughed off by every household in the ordinary course of its living, should be removed at least daily from the near vicinity of the dwelling, and the vessels in which it accumulates should be frequently cleansed and aired; manure heaps should not be left to ferment and send off their exhalations at a point whence frequent winds waft them toward and into the dwelling, nor should the barn-yard be allowed to drain, (either over the surface or through a porous soil,) toward the house or well. If all these precautions are taken, the well will be tolerably safe, and, in most cases, absolutely safe, but if there is any doubt on the point, then let no well-water be drank except after boiling; or the drinking-water of the house may be taken entirely from a filtering cistern, of which the filtering bed is sufficient to hold back all organic matter. If all these points are well attended to, and if the ordinary rules of cleanliness be observed in the household, the members of the family may be considered as safe against attacks of typhoid fever.

I might readily, in this connection, show that in carrying out the various details given above concerning the disposal of household wastes, the farmer would only be consulting his pecuniary interests, by increasing the value of his manure, and the economical use of his kitchen wastes, but I do not propose to weaken the argument by any question of dollars and cents. The fact that by an observance of these simple sanitary rules, one may save those he loves and cherishes, and for whose well-being he is accountable, from the assaults of our most widespread and our most nearly fatal disease, and that by neglecting them, he brings upon his own head the responsibility of their illness, their suffering, and their premature death, ought to be a sufficient appeal to any conscientious, civilized man.

During the last half of the past year our sales of Jerseys were 21 animals, which sold for $4,370, being an average of $208.09; 4 males sold for an average of $78.75, and 17 females for an average of $238.53.

Gen. William S. Tilton, the Deputy Governor of the Soldiers' Home, near Augusta, Me., continues his careful experiments concerning the yield of milk and cream of his herd. During the year ending Oct. 20, 1874, he had 2 Dutch cows, 7 natives, and 9 Jerseys. One of the Dutch cows was farrow, and is not to come in until next May; for this fact due allowance must be made in comparing the record; she gave only about one-half as much as the fresh one. One of the Jerseys was in the same condition, and similar allowance must be made for her. The yield of the whole herd per day, would be 33 per cent greater than it was the preceding year, if the two farrow cows were counted as fresh ones—if the herd had been kept for milk, and not for breeding, they would have given place to fresh cows. Gen. Tilton ascribes the increase of milk to improved feeding last winter, namely: "2 quarts of meal and 2 quarts of bran per day, to each animal, mixed with cut hay, and all steamed together; while the previous winter they had only long hay during the same months, Nov. 1st to April 1st. * * * We had no abortion, so that steamed food may be acquitted of causing that trouble." The summing up of the tabular statement is as follows, for the average of the whole year:

The Dutch were 335 days in milk, producing during this time a daily average of 7.23 pounds; the average percentage of cream was 9.03; the total production of milk was 4.7 times the live weight; the yield of cream per annum was 43 per cent of the live weight of the animals.

The natives averaged 303 days in milk, with a daily product of 19.1 pounds, and 9.82 per cent of cream; they produced 5½ times their live weight in milk, and 52 per cent of their live weight in cream.

The Jerseys were in milk 327 days, producing an average of 18.25 pounds per day, with 16.16 per cent of cream; they produced 4.9 times their weight of milk, and 78 per cent of their live weight of cream.

If others who are so situated that they can make careful experiments, would take the trouble to do so, and to report the results, they would not only benefit the readers of agricultural papers generally, but would find their own practice of feeding, and their selection of animals for the different uses of the dairy, very much modified by the information such a record would give them.

Science Applied to Farming.—II.

By Prof. W. O. Atwater, Wesleyan University, *Middletown, Conn.*

How Science is Saving Money and Increasing the Profits of Farmers—More About European Experiments.

As cattle are ordinarily fed, there is apt to be a waste of some of the nutritive part of the food. American farmers are often in doubt not only as to what materials will, at current prices, make the most economical fodder for their stock, but also in what proportions they should be mixed and fed to secure the greatest benefit. As yet they are without careful and accurate experiments to settle these questions. In the German Experiment Stations, a large number of men, fitted for the work both by the fullest scientific knowledge and by practical skill, devote their whole time to making feeding trials. Farms, stables, cattle, chemical laboratories, assistants, and everything needful are at their disposal. The systematic way these experiments are planned and carried out, and the care used to make them accurate and thorough, would astonish any one who has not looked into the matter.

Take, for instance, an experiment on feeding cows for milk. Of different food materials, what amounts and proportions shall be mixed in the daily ration, to obtain the largest and best yield of milk at the least cost? From the cows in the stable of the Station a number are selected and fed for two or three weeks with clover hay, then during another period with clover and straw, during other periods bran, or meal, or oil-cakes, or turnips, or two or three of these together, are mixed with the hay. The fodder given and the milk obtained in each period are carefully measured, and are also analyzed. Thus the effect of the different kinds and mixtures of food upon the yield of milk is accurately learned. Such an experiment often requires the hard labor of three or four men for as many months in overseeing the work in the stable, and making the analyses in the laboratory. No one can fail to see how valuable must be the application of the results of such experiments to practice. Information, just such as hundreds of thousands of American cultivators want, is obtained at these Stations, and spread abroad among the German farmers. And this is done at a cost extremely small in comparison with the money saved, and still smaller when compared with the increased certainty and enjoyment which they bring to the work of tilling the soil. The average annual expense of one of the German Stations is less than the salary often received for merely nominal services by a single party favorite in this country.

Hundreds of such feeding trials have been made in the European Stations during the last 15 years. They indicate, as a general result, that the dealing out of fodder is not properly a matter of so much hay, or turnips, or meal. It depends rather upon the amounts of starch, sugar, fat, fiber, albuminoids, salts and water, of which the hay, turnips and meal are composed. Chemical analysis tells us that all our common fodder materials contain essentially the same ingredients, but in very different proportions. Again, the animal is nourished only by that part of the food which it digests. The undigested portion passes off as excrement, and is useless, except as manure. A great many feeding trials have been made to determine how much of the starch, fiber, albuminoids, etc., of ordinary food materials are digested by oxen, cows, sheep, and other animals. It is found that unless the ingredients are mixed in proper proportions, only a part of the digestible material will be actually digested, while the rest will be wasted. By such investigations we learn also which of the food ingredients, (as starch, albuminoids, etc.,) are made over into fat, or into muscle or lean meat in the body; also which ones supply the fat (butter) and casein (curd) of the milk; which ones are consumed in producing the heat which keeps the animal warm, and which ones in yielding muscular force or working power. In short, these investigations show how the nutritive value of different fodder materials can be learned from their chemical composition, and in what proportions they should be mixed and fed out to the animals, in order that all the valuable nutritive material will be digested and utilized, and none wasted. But do the farmers in Germany turn these experiments to much practical use?.... I have here a German Farmer's Diary, or "Agricultural Calendar." Tens of thousands of German farmers carry copies of this little work in their pockets, and consider the information condensed between its covers as invaluable. Fifteen pages are devoted to the practical application of such experiments as we have described. First come tables giving the composition of nearly 200 different fodder materials, with directions for calculating their nutritive values. Then come Fodder Tables. These give the amounts of the food ingredients required per 1,000 lbs. live weight by oxen when at rest, and when at work, by milch cows, horses, sheep, etc. Then follow no less than 126 tables of fodder mixtures. These are calculated to contain the different materials in such proportions as to supply the animal's needs, and at the same time to secure the most complete utilization of the food. In this great variety of tables, any farmer can find just the information he needs to guide him in mixing and dealing out to whatever stock he may have to feed, the fodder materials which he may produce upon his farms or buy. And this is all expressed so plainly that he can understand it without any special scientific knowledge. I asked a great many of the farmers in Germany what they thought of these tables. The reply generally was, that it would be vain to follow them blindly, but that as aids in mixing and dealing out fodder they were extremely useful.

The work of these Experiment Stations, then, results in the definite knowledge of the principles

that underlie the right practice of farming. Thus guess-work, and the great waste that it brings, are done away with, and light of inestimable value is thrown upon the doubtful problems of our agriculture.

The *Experiment Stations* belong to the tillers of the soil. The first one was established by some enterprising farmers, aided by agricultural societies, at Moeckern, in Saxony, in 1851. So successful was this, that others soon followed. In 1856 there were 5; in 1861, 15; in 1866, 30; in 1871, 56; and there are now about 70 Experimental Stations in different parts of Europe. The yearly expenses vary from $1,000 to $10,000 each, and are borne in part by the government, in part by agricultural societies, and in part by private individuals.

That the European Experiment Stations save directly much more money than they cost, is shown by the willingness with which the farmers themselves unite in supporting them with their influence and their money. And yet this advantage is very slight in comparison with that which results from the interest they awaken in science, and the additions they make to the sum of our knowledge. He who has shared in the labors of the Stations, has seen the enthusiasm of the workers there for the science they are cultivating, has observed the eagerness with which the results of the work are received by the farmers among whom the work is done, has noticed how these results are applied to practice, and has then compared the culture of the soil, the crops raised, and the love of knowledge which exists there, with those where this science is less fostered, will be well persuaded of their value.

Attempts have been made with varying success to establish Experiment Stations in this country. The most promising is the Bussey Institution, of Harvard University. A large number of intelligent farmers in Connecticut, are making a vigorous effort to establish an Experiment Station in that State. The project was started at the annual State Farmers' Convention over a year ago. It has since been brought before the people in public meetings and otherwise, and has met their hearty approval. A bill providing an appropriation of money to establish a Station was presented at the last Legislature, but was deferred until the next session, which convenes next May. Meanwhile the farmers are determined that something shall be done. At the annual Farmers' Convention last December, it was proposed that some investigations be commenced at once. Several hundred dollars were subscribed, with the promise of more, for defraying the expenses. A most essential and fortunate encouragement for the plan was given in an assurance by Mr. Orange Judd, of the *American Agriculturist*, in behalf of the trustees of the Wesleyan University, at Middletown, of the free use for the purpose, of all needful room and appliances in the chemical laboratory, which occupies a large space with abundant conveniences for manipulation, in the magnificent Judd Hall of Natural Science, generously donated by him to the University.

In no country, not even in the best cultivated districts of Germany, is the average intelligence of the cultivators of the soil so great as it is here. Yet, with us, one thing is lacking. We need more system, more definite knowledge, more applied science in our agriculture. We want this much, for the money it will save, more to improve our methods of farming, and most of all for the addition it will make to our knowledge, and the stimulus it will give to our minds. For these, let us have Agricultural Experimental Stations.

Breaking Roads in the Snow.

"S. E. T." sends the following plan of breaking roads after a snow-storm, with a sketch from which an engraving has been made. He uses a common sled, and in front, before the first pair of knees, and between the reve and the runner, as shown in the illustration, he places a wide board, six feet long, or two boards battened together in a sloping direction. After a fall of snow the sled is drawn along the roadway, or wherever a path is desired, and the snow is packed and pressed down smoothly, without leaving any ridges. Our correspondent thinks this a better plan than that of the snow-plow described in the December *American Agriculturist*.

PLOW FOR BREAKING ROADS.

Voices from the Bee Hive.

INTERPRETED BY M. QUINBY.

Although the sting seems to be the only language that many human beings can understand, the indications now are, that some few begin to move on a higher plane. The experiment has been tried of practicing towards us something a little nearer justice; and our response has been most gratifying. Our sting was given us as a means of defense, and it is to be hoped after being kindly treated for a much less time than we have been abused, we shall forget it, or use it so seldom that it will seem useless. Our guardian after studying diligently, will find it necessary to discard many habits, theories, and impressions already formed; must train himself to avoid all collisions. He must rid himself of the idea that he can take all, and give nothing in return. We desire to be dealt with fairly, and will reciprocate every indulgence to the extent of our power Too many think they lose time by working carefully, when the truth is, it is economy to work slowly, as rash handling rouses our temper, often destroys our lives, and tends to our keeper's loss generally. *Let this truth be repeated until better understood.* Let us tell you how to make a hive to suit *us* much better than many yet offered. When calculating on the advantages of having the walls of the hive of good thickness, and a non-conductor of heat, you must bear in mind that the human body generates heat until a temperature of near 100° is reached. This is maintained until the surrounding atmosphere is colder and reduces it. Clothing surrounds the body, to keep it comfortable, by preventing this heat from passing off too rapidly. A swarm of bees are in a similar condition. Heat enough is generated for our comfort, as long as the hive given us is sufficient to retain it. If the

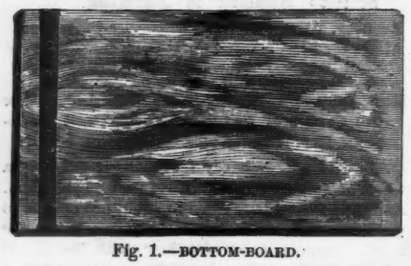

Fig. 1.—BOTTOM-BOARD.

material of which it is composed, is a non-conductor, and our family is large, and there is no escape for the warmth generated through any hole or crevise, we keep warm enough. A perfect non-conductor we have not yet had. A small family can not generate warmth enough in a cold atmosphere to keep comfortable.

Fig. 3.

When such a family is placed in a hive with thick walls, the rays of the sun do not strike through as quickly as if they were thin, and we are not as much warmed in consequence, by a few hours of sunshine. We recommend material for this hive, only half an inch in thickness. If the warmth of the cluster passes off faster through such, we shall probably be warmed up by the sun's rays quicker, to make up the difference. We shall recommend a part of the hive described in the *American Agriculturist*, in June, 1873, as that constitutes one answering all purposes, for which we, and many of our owners want it. If desired, this hive can at any time be converted into the one referred to. This modification, or part of said hive, can be made almost as cheaply as the box hive. But as many will not recall the one described, a repetition may be necessary.

1st. Get out the bottom board. Let it be 11 inches wide, by about 20 long, and about 1 inch thick. Put cleats on the under side, to prevent warping. Plane the upper side smooth. Get a piece of hoop iron, 11 inches long, ¾ wide; ¼ inch from one edge, make six or eight holes through, to drive nails. Put under the hoop iron a strip of veneering of hard wood, driving nails through this as well as hoop iron. Nail it across about an inch from the end of bottom board. The hoop iron should project over the piece under it, ¼ of an inch. This will give a space to hook on the frame. The bottom will appear like fig. 1.

Next, get material for frame. Let two pieces be 11 inches long, ¼ inch thick and 1½ wide, measurments exact. Two pieces, 18½ inches long, from inch boards, and ¾ thick. Nail through the shortest pieces into the longest ones, just ¾ inch from both top and bottom, and you have a frame like fig. 2. Nail firmly with finishing nails. Guides for straight combs should be in the top. The frame is held in position by a piece of hoop iron, 3 inches long, bent into an angle like fig. 3. Two holes are made through it to fasten it with nails to the lower corner of one end of the frame, as at *a* fig. 4, and it is ready to hook under the hoop iron on the bottom board, and the frame will stand upright. A small nail dropped in loosely, prevents unhooking. A half dozen will set on the bottom board. A wider board can be made if wanted, to make the hive larger, or two can be joined together. Directly under the center, where the front end of the frame sets on the bottom board, an entrance can be made. Let it be cut out of the bottom board, half an inch in depth, and three-fourths wide, extending four inches under each frame. The sides and top are made of half-inch boards, planed smoothly just

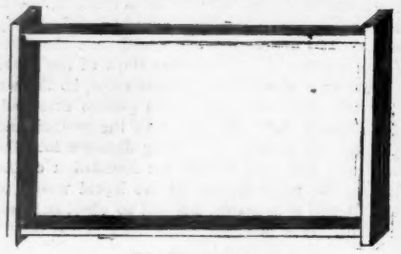

Fig. 2.—FRAME.

the size of frames, with cleats nailed on each end, to prevent warping. Put one on each side, and one on top, and tie together with a stout rubber cord. It will hold every thing snug, and the hive is done. It is convenient for our actual needs. But as our owners may desire surplus honey in boxes, as well as to extract, arrangements may be made for them. Have the bottom board wider than specified above, and a number more frames, according to the strength of the colony. Then make a number of small frames—be sure and have enough. The boards of which they are made, need be only ¼ inch in thickness, and 1½ in width, and the length just right to make a box when nailed together, 5×6 inches square. Six of these will go in one of the large frames, appearing like fig. 4. If they do not stay in properly, a little wedge will hold them firmly. A guide can be put in the top of each. As many frames as a colony can possibly need, should be prepared, a part, or all, may be put into the hive with the others, and all shut up closely. If only two are put in, let one be on each outside of the others, they will need but little attention until full. But if bees are crowded outside, more should be put between the full combs of the hive. A number of these frames with combs started in them, may be put together on the top of the hive, covered with a box—holes in the bottom of course—glass or boards on the outside. These combs will be filled in less time, if first put in the main hive, and then removed to the top. When these little frames are put between the full combs of the hive, they will need looking at once in five or six days, to see that brood is not started; in which case they should be removed, and replaced with empty ones. The former to

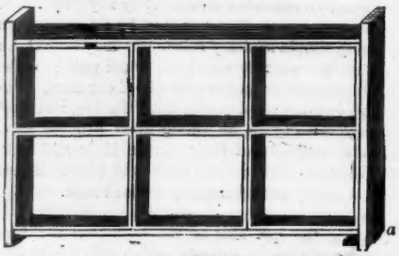

Fig. 4.—FRAME WITH SMALLER FRAMES FILLED.

be set away until the brood is chilled, before they are put on the top, as maturing brood will darken the combs.

The hive alluded to is much more convenient, and much more trouble to make. Those who have not time, or feel too indolent to take so much trouble to get a nice thing, must submit to be rewarded in proportion.

The Tumbler Carts.

At present the handling of manure is the heaviest labor on the farm. Every pound is handled many times before it is finally spread upon the field. Some of this work is necessary, for it must be heaped and fermented, and made fine before it is fit for use, but with improved implements much of the present labor may be saved. The tumbler cart is an implement which will much facilitate the handling of manure; this is in common use upon English farms, but in this country is only seen in cities, for collecting the sweepings of streets, and dumping them upon waste heaps or the scows which carry them away. It is seen in operation in the illustrations; and is a cart box suspended upon a round axle, which either passes through it, or being bent, passes beneath it. By means of a chain affixed to the bottom, an axle, a pair of gear wheels, and a winch, the cart may be tipped and the load dropped. To work with these carts in the most economical manner, a pair of them should be used, or more if necessary, and but one extra hand is needed at the loading. The driver dumps his load almost instantaneously without help, and by partly tipping his cart, and using a drag-hook, he may drop his load in several small heaps in less than half the time he could do so with a fork from a wagon. The method of using the carts is so clearly shown in the engravings, that description is unnecessary. To handle manure from the first in the easiest manner, it should be thrown into one of these carts from the stable, which should be made so that a cart may be driven through it from end to end, and as it is loaded with the fresh droppings, it should be driven to the field where the manure is to be used. There it may be piled up by driving the cart upon the heap, and dumping it where it is wanted. By keeping the end of the pile sloping this may be done. This will prevent the necessity of piling manure in the barn-yard, and will tend to keep the yard neat and clean. When the manure is to be spread, it can be done expeditiously, it being near the spot where it is needed, and thus there will be a saving of time, when work is hurried and time is valuable. These carts are very handy for moving earth, and there are many other profitable uses for them which will occur to those interested. As a general thing carts are not used upon farms nearly so often as they might be with advantage, and when they are to be made, it may be as well to consider whether these tumbler carts do not possess some good points which the ordinary carts do not, for some of the heavier labors of the farm. One of its chief points of excellence is the low body, and the need to lift the material to be loaded only a short distance, and this certainly is an important consideration. Another advantage of a cart is the ease, with which it is turned about and handled in narrow spaces; the less cost of harness, too, is an item worth consideration.

Fig. 1.—TUMBLER CART—LOADING.

Fig. 2.—TUMBLER CART—DUMPING.

Salt Marshes on the Pacific Coast.

BY ROBERT GUNTHER, HUMBOLDT BAY, CAL.

In the October *Agriculturist* is an article on "Progress in Reclaiming Salt Marshes." As I have spent the last fourteen years in reclaiming a salt marsh, nothing can interest me more than to see articles in the *Agriculturist* on salt marshes or on draining. I am astonished to find that the salt marshes along the Atlantic coast still lie waste; on this Bay there are thousands of acres of marsh land, and considerable money has been invested in reclaiming them, but so far I am the only one who has been partially successful. The fact is, few people are in the habit of doing work as it ought to be done, and none but thorough work will answer in reclaiming a salt marsh. No dike has ever been built high and strong enough to withstand the pressure of the water at high tide on this Bay; even my dike, which is at least three times stronger and higher than any other here, broke through last winter. People repair their dikes once or twice, but after they are repeatedly broken through, they give it up in disgust, and I would have done the same but for an inherited obstinacy. My dike has broken through several times, and is not safe now, but I intend to keep to work at it until I make it what it ought to be. There is another reason why the progress in reclaiming salt marshes is so slow. To dike on a small scale will not pay. The larger the tract of land enclosed with one dike, the less is the cost of diking per acre; therefore, in order to dike to advantage, capital is necessary. If a farmer clears a piece of woodland he often raises a large crop the first year, while it takes several years before a salt marsh becomes remunerative.

You say that there is no well-digested plan for introducing the upland grasses. I have experimented for several years upon this point, but I have come to no conclusion as yet. So far as the marsh-land on this coast is concerned, it is injudicious to sow grass seed without plowing; the grass will take, but the salt grass will soon run it out. I tried an experiment and made a great mistake in burning the sod, which is easily done in California, as we have no rain during the summer. I plowed fifteen acres, and after the sod was dry I set fire to it; the fire not only run over the plowed ground, but the sod of several acres that were not plowed was burned. What seems stranger is that I have not been able to raise a decent crop on that ground since. In the spring the soil is sticky, but not tough; after it dries, the clods get hard, yet during the summer the soil slackens and forms a blackish brown powder on the surface, of which I send you a sample; if you can give me any information in regard to it, please do so.—[This sample, which was an almost impalpable powder, was roughly analyzed; 73 per cent of ash remained after burning, which contained considerable iron. The amount of organic matter thus ascertained is so small that this will hardly pass for poor muck.—ED.]

To introduce upland grasses I believe the best way is to first bring the marsh in thorough cultivation. To do this on this coast I plow the marsh in

the spring and sow it with oats, but not too late, for the sod is so tough that it is impossible to harrow or drag the oats in well, and as much is left on the surface it is necessary to have rain after sowing in order to make it sprout. If the plowing is well done, and all the sod turned over well and flat, it will produce a big crop of oats, and will annihilate the salt grass and weeds entirely, but what crop is most profitable to raise after the oats I have not yet determined. This method has another great advantage. As salt marshes are generally much broken by sloughs and mud-holes, many of those can be filled up by throwing the nearest sods into them. The ground ought not to be plowed very long before the time of sowing, for if the salt grass begins to grow before the oats, it is likely to keep the advantage and spoil the crop.

You mention timothy plumes on a reclaimed marsh five and six inches long. When I used to raise timothy on my marsh without plowing, plumes from ten to twelve inches were not uncommon, yet the timothy never grew thick, and the salt grass always run it out. That part of my marsh which has not been plowed, now produces a mixture of salt and tame grasses and considerable clover. The hay is of a fair quality, and the yield from two to three tons to the acre, yet I am convinced that it is by far the best policy to plow the marsh up.

I should like to know if your salt marshes and ours are composed of similar materials. I send you two grasses. No. 1 dies out, and No. 2 grows all the better when the marsh gets fresh.

[Of the specimens sent, No. 1 is not a grass proper, but a *glasswort* (*Salicornia*), which is also common on the Atlantic coast of both continents, and is one of the plants formerly burned to obtain soda. No. 2 comprises two grasses, one of which, very rigid, is *Brizopyrum spicatum*, also common at the East, but the mass of the sample is of another species, which, being without flowers, could not be identified.—ED.]

Walks and Talks on the Farm.—No. 134.

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I have just got home from a short visit to Massachusetts, and the Deacon came up to have a talk. "I wish you had been with me, Deacon," I said. "Several people, whom I had never seen before, asked, 'How's the Deacon.' As I was going from Albany to Westfield, I sat in the same seat with an intelligent, farmer-looking man. We talked a little about the weather, and looked through the window a good deal. Finally some agricultural topic was alluded to, and he asked if I was a farmer and where I was from? 'Why,' he exclaimed, 'can this be 'Walks and Talks?' I could not deny it. 'Give me your hand,' said he, 'and how is the Deacon?' It was T. S. Gold, Secretary of the Conn. State Board of Agriculture, and we talked lively during the rest of the journey."

I visited three or four of the most celebrated farms in Massachusetts. It is very different farming from ours. I saw no straw stacks and no sheep. Hay and milk are the chief products on the farms I visited. Corn fodder on one farm is raised extensively, and on another oats are grown and cut soon after the grain is formed and made into hay. The land was seeded down with this crop, and I never saw a better catch. It seemed to be quite common, too, to fallow a field and then seed it down with timothy and clover in the autumn without any other crop. This is a pet recommendation of my own, and I was glad to hear that it worked admirably.

I would give a good deal for one of these Massachusetts barns—that is, if I had money enough, I would give, say from one-third to one-half what they cost. I could use them to great advantage. One barn, built by the former owner of the farm, at a cost probably little less than what he afterwards sold the farm for, was about 120 feet long and 40 feet wide—the barn-floor running through the center, the long way of the barn. There was an ell to this main barn, about 80 feet long and perhaps 36 feet wide. It was occupied by two rows of cows, facing a wide passage in the center, and there were several loose boxes for calves and for cows about to calve. The arrangements were excellent. "This is magnificent," said I, "but what is the use of this wide passage between the cows. It seems a great waste of room."—"That is horrible heresy here," replied my friend. —But he gave me no satisfactory reason. Underneath the whole of this large barn is a splendid cellar. It is dry, warm, well lighted, and well ventilated. If I had such a cellar, I think I could find ample room in it, with open yards attached, for a flock of two hundred long-wool sheep, fifty or more head of cattle, one hundred or more pigs, a stable for all my horses, and a cellar capable of holding 10,000 bushels of roots. All this room is sacrificed, at any rate to a great extent, apparently for no other reason but to secure a *manure cellar!* The advantages of this system of handling manure must be very great, to pay for such a large and costly receptacle. One-fifth of the room would be sufficient to hold all the manure for six months, and the labor of putting the manure into a barrow and wheeling it to one end of the building and dumping it into the cellar, would not be much more than opening and shutting so many trap-doors behind the animals.

I got several capital ideas from my short visit—one of which I have adopted since I came back. I always knew it was a good plan, but there is nothing like seeing the thing carried out on an extensive scale in practice. When I came home, I said to my men, "You recollect those three gentlemen who where here during the State Fair. They live near Boston, and I have just been to see their farms. And I wish you could see them too. I do not think I ever saw more active, enterprising, and intelligent farmers in this or any other country. One of them keeps 200 pigs, and I was on another farm where 150 were kept."—"We've got pretty near as many," said Willie."—"Yes, but do you see yonder big straw stack," I replied. "Big as it looks, we shall have to be very saving of it, or we shall be short of bedding before next harvest. Now, these gentlemen do not have one-tenth as much straw, and yet they manage to keep their cow stables and pig pens as clean as we do, and let none of the liquid run to waste."—"Perhaps," suggested Willie, "they use corn-stalks, or potato tops, or horse litter, or"—after a little whispered prompting from the Deacon—"or dried muck from the swamp."—"No," I replied, "it is something that we have plenty of. There are loads of it close at hand."—"I know what it is," said Charley; "*it's dirt.*"—"Charley has guessed it," I said. "In the summer they draw a quantity of dry earth from the roads, or from anywhere most convenient, and store it up in the barn ready for use. And every day they scatter a few shovelfuls of this dry dirt about the pens and stables. And now," I continued, "right under that barn, where we are making the new cellar, is all the dry earth we need. Fill that empty pig-pen with it, and use as much of it every day as you want in the cow stable and in the pig pens to keep them dry and sweet. Scatter a little of it on at a time. You will find a wheelbarrowful will go a good way."

This is a long story about a very simple matter. But it had the desired effect. It carried conviction. And now, if I was writing an article for the papers, I should say we are using "dry earth as an absorbent and disinfectant." But in these plain "talks" I say, we are using dirt to keep the pig pens clean.

"You must be making a pile of money out of your pigs this winter," remarked the Squire.—"I am making a pile of manure," I replied, "and hope to get a little money from the old farm by and by. I have had the men and teams drawing out manure for over a week, and putting it in a pile in the field where I am going to sow mangels next spring."—"I see," said the Squire, "you have got three extra day hands. The Deacon and I think it does not pay to employ so much labor during the winter."—"You are both of you men whose opinion," I replied, "is worthy of consideration. Still, every man must do his own thinking. I keep eight horses. They cost me at least $16 a week. I want to make them earn their living. As long as I can find work for the teams that ought to be done, I think it pays to hire extra men enough to keep the teams busy. This is all I am doing. Every spring, summer, and autumn, we have to leave something undone that we want to do, because men and teams are pressed with work that can not be put off. The only remedy is to push things now. We are drawing out manure. When this is done, we shall draw stones from the heaps to build a stone wall next spring. Then there is wood to haul, and straw and hay to chaff. We have ten tons of plaster to draw nine miles from the mill, and draining tiles an equal distance. And as fast as we get spare barn room, we can draw in a stack of hay from the field."—"You ought to build a new barn," said the Squire. —"When I do, I shall aim to draw the materials in the winter," I replied, "and not be compelled to neglect farm work in summer. I tell you, if you only go at it, you can find plenty of work for your teams to do in winter. And if by hiring a man you can keep a team busy, that would otherwise be doing nothing but eating hay in the stable, it will pay to do so."

"Perhaps you are right," said the Squire, "but the days are very short, and you want men who will fly round in a morning."—"Begging your pardon," said I, "that is precisely what I don't want. I want a man who will work after dark at night, rather than a man who is poking round before light in a morning. When we are drawing out manure, I like to see a man fill his load at night, and have it all ready to hitch on to the first thing in the morning. Your sluggish 'early bird' will not do this. He will be up at 4 o'clock in the morning. He will be watching the clouds and speculating about the weather. It will be too cold, or too wet, the road will be slippery, or too rough, or there will be too little snow, or it will be drifted. There will be a lion in the way, and he will have to wait until broad daylight before he can make up his mind whether to go to work or not. Finally he will get out his horses, and let them stand shivering while he fills his load. The other man, who got all ready the night before, brings out his horses cheerfully and promptly, hitches them to the load, and is off to the field, whistling merrily in the frosty air. He warms himself up by throwing off his load with a will, and is back again before the other has made a beginning. It is so with everything we do. The great thing is to get an early start."—"That is precisely what I say," broke in the Squire.—"Exactly, but you want to begin the day in the morning, while I want to begin it in the evening. 'The evening and the morning were the first day.' 'Give not sleep to thine eyes, nor slumber to thine eyelids, till you have done all that you ought to do.' It is bad enough to lie abed late in a morning. It is worse to lock up the stable door soon after sundown, leaving the horses hastily fed and poorly groomed, that you may spend the long evening yawning over a hot stove."

I am always sorry for a young farmer, who thinks he is going to get rich by adopting some scientific suggestion, or some mechanical invention, or by raising some new variety of grain or fruit, or keeping some lauded breed of cattle, sheep, or swine. It won't do. It is beginning at the wrong end. Better at first follow the practice adopted by the best farmers in the neighborhood, and then, after a few years' experience, gradually adopt any improvement you may see, or hear of, or read about. In the meantime, the real aim of the farmer should be, to get his work done as promptly, as effectively, and as cheaply as possible. An English farmer has recently suggested a plan, which the Deacon and I have often talked about. He keeps 12 horses. He would, therefore, require six men to take care of and work them. He proposes to use three-horse teams and double plows. There is nothing new in this. But he proposes to have one man take charge of the 12 horses. This is to be his business. Then he would keep only two plowmen, and let them, as far as possible, do the plowing, harrowing, cultivating, rolling, drilling, etc., at a certain

price per acre. Each man would have six horses; three would be resting in the stable, while the other three were at work. I believe the plan was to change horses not only at noon, but perhaps once in the forenoon, and once in the afternoon, though the details are not given. In this way, he thinks, he should get full as much work done, with just half as many men, while the horses would not suffer, as they now so often do, by being kept too long at work in the field. I feel sure that it would pay me to have a man do nothing but take care of my horses, implements, machines, wagons, harness, and everything connected with the teams. If he would keep everything in repair, and everything in its place, and clean and feed the horses properly, he would earn twice as much as he possibly can by going into the field to plow and harrow.

I am trying to persuade the Squire and the Deacon to join with me in ordering ten tons of superphosphate and ten tons of nitrate of soda. We can get, so I am told, a superphosphate, in lots of not less than ten tons, at a price equal to 12½ cents per pound for the soluble phosphoric acid that it contains. We can afford to use it at this price, and I feel pretty certain, that we can also afford to use nitrate of soda on barley and potatoes—using say 200 lbs. of superphosphate and 200 lbs. nitrate of soda per acre. Commercial nitrate of soda contains about 15 per cent of nitrogen, and if it can be bought for 3¾ cents per lb., we get nitrogen at 25 cents per lb. It has hitherto cost us at least 30 cents in our best artificial manures.

"But will it pay?" asked the Squire, who has several large farms, and is quite rich, and very keen, where dollars are concerned.—"At the present price of barley," I replied, "nothing can pay better. The manure will cost us say $10 per acre, and if the land is dry, well worked, and the crop is put in early, and the season is favorable, we are pretty sure to get an *increase* of 20 bushels of barley per acre, from this $10 worth of manure."—"You put in a good many 'ifs,'" quietly remarked the Deacon, "but if the Squire likes to join, I will take half a ton of each. But *you must say nothing about it.*"

After they were gone, I could not help exclaiming, "good for the Deacon."—I am anxious to have him try it. Not merely because I think it will pay him, but because if it does, I can prove to a demonstration that we can get nitrogen and phosphoric acid at a far cheaper rate here at home, by keeping more stock, and feeding it liberally.

For instance, a ton of corn-meal contains 36 lbs. of nitrogen, worth, at 25 cents a lb., $9.00. It contains phosphoric acid equal to 22½ lbs. of phosphate of lime, worth say 6 cents a lb., or $1.35; and, besides other matters, it contains 7 lbs. of potash, worth say 7 cents per lb., or 49 cents. In other words, the manurial value of a ton of corn is $10.75. On the same basis, the manurial value of a ton of oats is $12.10; a ton of wheat, $11.94; barley, $10.64, peas, $20.54; fine mill-feed, $22.76; bran, $24.32; malt-combs, $30.23; clover-hay, $15.82; wheat-straw, $4.57; oat-straw, $4.87; *good* pea-straw, $9.35; meadow-hay, $10.65; mangel-wurzel, $1.70; potatoes, $2.73; linseed oilcake, $31.96; decorticated cotton-seed cake, $45.26.

I am now feeding my young pigs on malt-combs, bran, and corn-meal. The malt-combs cost 15 cents a bushel, or about $12 per ton. The bran $22 per ton. The corn-meal $38 per ton. We mix about 100 lbs. malt-combs, 50 lbs. bran, and 50 lbs. corn-meal, with 80 gallons of water, and steam it until well cooked. This cooked food contains about 75 per cent of water, or about as much as green clover. Pigs six months old eat about 20 lbs. of this mixture each per day, and gain about 8 lbs. each per week. The weekly ration, therefore, is composed of 17½ lbs. of malt-combs, 8¾ lbs. bran, and 8¾ lbs. corn-meal for each pig. The food, leaving out the expense of cooking, costs 37½ cents per pig per week, and from this we get 8 lbs. of increase, equal to say 6 lbs. of dressed pork. I am expecting to see such pork worth 12½ cents per lb. If so, then the pork will bring just double what the food costs. In other words, three shillings' worth of food produces six shillings worth of pork. And we get the manure into the bargain.

Now if nitrogen is worth 25 cents a lb., phosphate of lime 6 cents, and potash 7 cents, then the manurial value of 17½ lbs. malt-combs is 26¼ cents; 8¾ lbs. of bran 10½ cents, and 8¾ lbs. corn-meal 4¾ cents. Total 41¾ cents. In passing food through an animal, a small portion of nitrogen is retained in the form of flesh, hair, bones, etc. It probably ranges between five and ten per cent. In other words, 100 lbs. of nitrogen in the food, would give us from 90 to 95 lbs. in manure. The loss of phosphoric acid and potash is very much less than this. Provided we do not lose any of the manure from leaching and evaporation, we shall be safe in concluding that there is not more than 10 per cent of the manurial value of the food taken out of it in passing through an animal.

These figures, therefore, lead to the following comfortable conclusion. Each pig per week eats three shillings' worth of food; and for this we get six shillings' worth of pork, and three shillings' worth of manure.

And so, if I can get the Deacon to buy nitrate of soda and superphosphate, I shall be able to prove that he makes a mistake in not keeping more stock—that he can get nitrogen, and phosphoric acid, and potash, cheaper from clover hay, oil cake, and bran, than he can buy it in the form of artificial manure.

When I have gained this point, then the question will come up why we do not get as great an effect from the nitrogen in our manure, as we do from the nitrogen in ammonia and nitric acid. And this will bring up the question, how best to manage and apply manure. The Deacon and I differ on this subject, and I want to convince him that if I am not right, I can at any rate give some good reasons for my faith and practice.

Emasculation by Torsion.

BY J. C. MCKENZIE, V. S.

The "ecraseur," as described in the *Agriculturist* of Nov., 1874, has many advantages over the older methods of castration, as by its use the operation

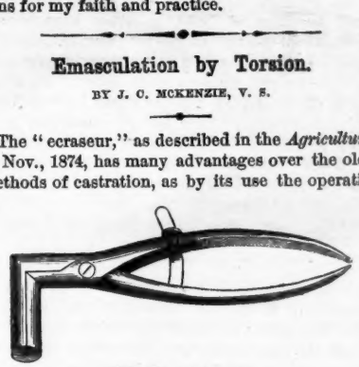


Fig. 2.—FORCEPS.

is rendered simple and safe. But none of the methods hitherto in use are any simpler or safer than that of the torsion clamps and forceps, which is new in this country, but extensively used by European veterinarians. The method is as follows: the horse being cast and secured in the usual manner, the operator, kneeling on the left side, grasps the parts so as to make the skin of the scrotum tense. He then makes one steady bold incision about three inches long through the scrotum and down on the gland, which can now be cleared of its coverings, and gently raised from its bed; the operator then cuts through the white and bloodless portion of the gland, being careful to place nothing but those portions containing the artery and veins accompanying these arteries in the clamp, fig. 1. The clamp, which is rough in its inner edge, like the teeth of a smooth single cut file, is then pressed rather tightly on the cord, and the screw turned to retain it in place; the cord is then divided with the knife, leaving a portion, which is then grasped by the forceps, fig. 2, about a quarter of an inch from the clamp. This is gently twisted until the coats of the artery are broken and drawn out, resembling the end of a thread; the forceps and clamp are then removed, and the cord allowed to fall back within the scrotum; the other gland is treated in the same way, and the operation is completed. No after-treatment is required, little or no swelling takes place, the process of healing commences at once, and continues to go on successfully. This method has the advantage over the ecraseur that the operation can be performed in shorter time, as the working of the ecraseur must go on slowly to insure the desired amount of compression on the vessels, to avoid hemorrhage, which would otherwise take place. But by torsion, in most cases,

Fig. 1.—CLAMPS.

not one drop of blood is lost from the vessels of the cord. The second advantage over the ecraseur is, that it is less painful, the horse giving only one struggle when the clamps are pressed tightly, and the animal feels little or no pain while the act of torsion is going on. In using the ecraseur, I have seen violent struggling at each alternate turning of the screw, the compression causing a shock to the animal every time. Another advantage over the ecraseur is, that the instruments used cost little over one-third of the price of a good ecraseur. This is a new method in this country, and is not to be confounded with simple torsion of the vessels, which is of more ancient date, and is often followed by hemorrhage. This method of torsion was introduced into Rochester, N. Y., last spring, and the operation performed successfully upon a large number of colts and old horses.

A Picking or Marketing Box.

Boxes that will hold a heaped bushel, (2,750 cubic inches,) and that will fit closely into a wagon-box, are very useful for gathering corn-ears, potatoes, apples, or such market truck that is generally sold by the bushel. They are equally useful for marketing such produce. When they are most needed, there is no time to make them, but the winter months furnish the leisure needed, to prepare a supply of them. Those who would have them for next season must therefore now procure the materials, and go to work to make them. The most convenient box of this kind is shown in the engraving. It is 16⅝ in. long, 14 in. wide, and 12 in. deep, inside measure, thus making 2,751 cubic inches, or as nearly as possible a heaped bushel. To make them most economically, procure a quantity of dressed ⅞-in. boards, 12 in. wide, and 12 ft. long. These are cut into pieces, 14 in. long, each board making 10 pieces, which are for the ends of the boxes. A row of 4 holes are bored with an inch-and-a-half bit and auger, about 3 inches from one side of these boards, and connected by cutting away the wood between them. This makes a place in which to put the fingers, when the boxes are handled. Provide also a quantity of battens, 1½ in. wide, ⅞ in. thick, and 12 ft. long. These are cut

A PICKING BOX—BOTTOM UPWARD.

into lengths of "scant" 17⅞ inches. Six of these pieces are nailed to the end-pieces for the bottom, and five upon each side, leaving spaces of about an

inch between them. The box is then complete. Two will fit lengthwise into a 36-inch wagon-box, and if the wagon-box is 14 ft. long, 24 boxes will cover the bottom of it; 24 more may be placed upon the lower ones, making a load of 48 bushels. For a hundred boxes there will be needed 20 boards, or 240 feet of face measure of lumber, and 200 battens of 12 feet long, or 300 feet board measure. Sixpenny nails should be used to nail on the lath. As the corn is husked, or the potatoes or apples gathered, the boxes should be filled. The empty boxes are placed upon the field, where they will be needed, from the wagon, and the full ones are then picked up and loaded. Thus half the boxes are being filled, while the other half are being carried off and emptied. When out of use they should be piled carefully away in the tool-house. They may be piled away in the root-cellar, filled with potatoes, one above the other, very neatly and compactly. If there are several varieties grown, each may be thus kept separate from the others, by chalking the names of the variety upon the ends of the boxes. The cost of 100 of these boxes would be about $15 for lumber and nails, and 5 days' work in cutting the stuff and putting it together. With care they may be made to last many years, so that the yearly cost is a trifle, which will be repaid many times over by the saving in time and labor in handling the crop each season.

Permanent Lime-Kilns.

In many places where limestone underlies the country for miles, and rises in bare cliffs on every hand in the midst of forests and timber, furnishing abundant fuel, lime is often a scarce article. The reason for this is that the lime is burned in kilns of the poorest and most temporary character, and those who produce the lime make no money, while its use is seriously restricted. A knowledge as to the building of lime-kilns is much needed. Scarcely a week passes without a request is made for information as to the building of them. The *Agriculturist* has already given directions for building a cheap kind of kiln, known as the intermittent kiln, (Sept., 1871,) and now, in response to several requests, presents plans and directions for permanent kilns. Lime is one of those necessaries, for which a cheap supply never fails to create a large demand. A permanent kiln of some kind is the cheapest method of producing it. One of these kilns, as shown in fig. 1, may be built in a hill-side. An excavation is made in the hill about 15 feet deep and 14 feet in diameter at the top, gradually tapering in the form of an inverted cone, until it is 5 feet in diameter. From thence the excavation is carried straight downwards for about 4 feet. In this excavation the walls of the kiln are built of sand-stone, trap-rock, or hard brick, or some refractory material, that will resist the necessary heat. Commencing at the bottom, the ash-pit, *A*, is built up square with upright walls, the floor sloping forwards, and an open front, as shown in fig. 1. At the top of the ash-pit the wall is gradually drawn in a few inches on each side, to prevent the lime from clogging the throat. Across the pit, the bearing bars, *b*, *b*, of cast iron, 3 inches by 2½, are built into the walls in such a manner that they may be drawn out when required. Upon these the draw-bars, *c*, rest. These are round wrought-iron rods, 1¼ inch in diameter, with spaces of 1 inch between them. They should have an eye upon the near end, so that a bar may be inserted with which to draw them out with a twisting motion when they are held by the pressure of the lime upon them. Above these bars a strong wrought-iron frame, 3 inches wide, seen at *d*, is built into the wall, through which the fire may be lighted, or a bar inserted to loosen the lime when choked in the throat. An arched opening, 6 feet high, is made at the front of the kiln, in which a man can stand upright, to draw the lime or to light the fire. This archway is seen at *E*. In fig. 2 a front view of all these parts is given. Above this arch the wall is carried up double, being filled in with loose rubble. In front of the kiln a shed is made and roofed with board. In this the lime is stored and protected from the weather. To start a kiln, some kindling wood is thrown down upon the fire bars, and a supply of fuel, either wood or coal, is placed upon this to a depth sufficient to start a good fire. Some limestone in small pieces is then thrown upon the fuel, and the fire is lighted. The iron frame is then closed with bricks and plastered with clay, or an iron damper is fixed to it and closed. When it is well started, more fuel, then more limestone is thrown on, until the kiln is filled, and as the mass burns down, this is repeated, the kiln being kept filled to the top. A circular path, or platform, is made around the top of the kiln, from which it is filled from wheelbarrows or from dump-carts. In feeding such a kiln as this, the proportions are six of limestone to one of fuel. One cord of wood is equal to one ton of coal. After this kiln is once started, it needs no re-kindling for months together; as the materials sink down, they are replenished at the top of the kiln in the proportions mentioned. As soon as the lime is sufficiently burned at the bottom, which may be tested by drawing two or three of the bars, it may be drawn regularly every twelve hours, by taking out a few of the draw-bars and allowing the burned lime to fall into the ash-pit, from which it is pulled with an iron hoe or rake into the shed to cool. The bars are then driven back into their places again, and left until the next drawing. An improved perpetual kiln, suitable for a large and permanent business, is shown in figs. 3, 4, and 5. Fig. 3 is the ground plan. It is 18 feet long and 13 feet wide, with a draught chimney at each end. A central flue, seen between the chimneys, with openings at the top, through which the fire reaches the lime, passes through the kiln from end to end. Lateral flues of the same character reach from the sides to the central flue. These are seen at *a*, *a*, *a*, figs. 3 and 4. Between the flues are the withdrawing holes, *b*, *b*, *b*, figs. 3 and 4, furnished with bars similar to those already mentioned. The fire and withdrawing holes, and the ash-pits beneath, are closed with iron doors after the fire is started, except when it is necessary to replenish it

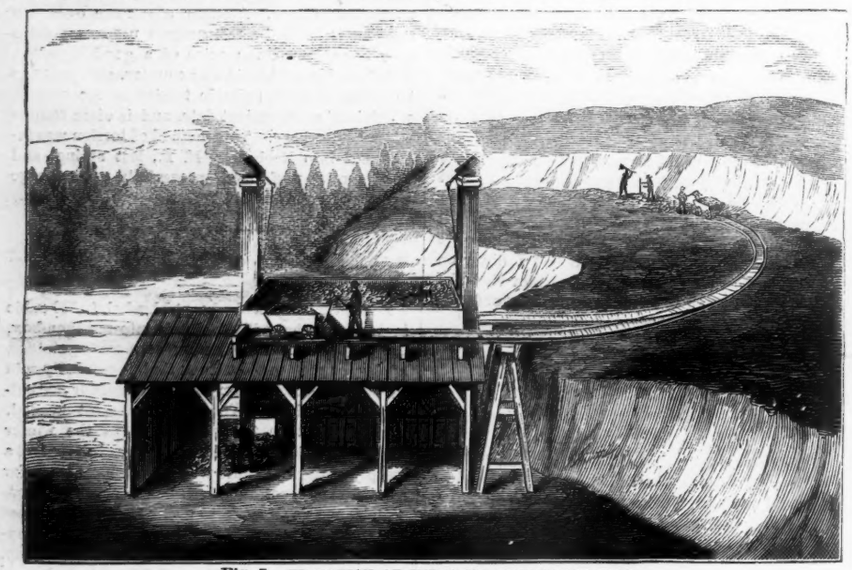


Fig. 5.—ELEVATION OF IMPROVED PERMANENT KILN.

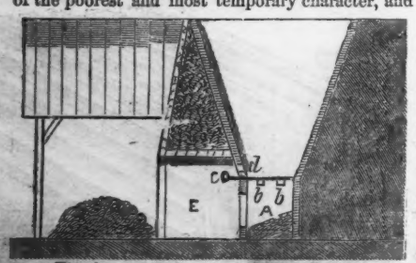


Fig. 1.—SECTION OF PERMANENT KILN.

Fig. 2.—FRONT OF ARCH.

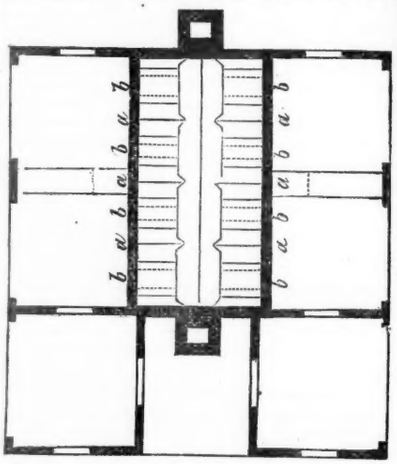


Fig. 3.—PLAN OF IMPROVED PERMANENT KILN.

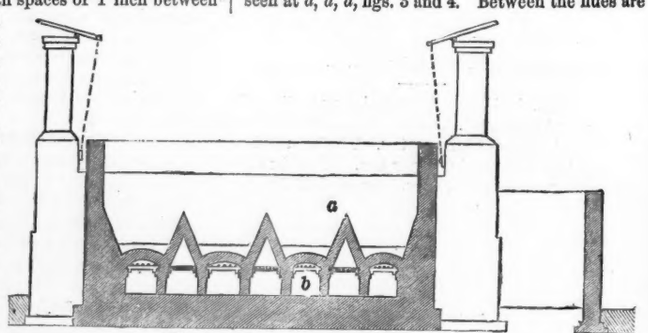


Fig. 4.—SECTION OF PERMANENT KILN.

with fresh fuel. The flues are covered with heavy cast-iron plates, pierced with round holes 2 inches in diameter. The ends of the center flue open into the draught chimneys, seen at figs. 3 and 4. These chimneys are covered with plates of cast-iron, arranged so as to be opened when the fuel is first fed into the fire, to let the smoke pass off, and closed when it has burned up clear, to throw the flame into the mass of limestone in the kilns. The kiln is surrounded by an open shed, and is supported by buttresses, one in the center and one at each end, at each side. The walls are two feet thick, and are strengthened with iron bands around them, drawn tight with adjustable couplings. Fig. 4 is a section of the kiln, showing the method of construction. It is seen that it is simply a combination of four ordinary kilns. The kiln should be lined with fire-brick, 9 inches thick, for 4 feet above the fire-bars, and the work around the fire-holes should all be of fire-brick. Fig. 5 shows an elevation of the kiln, with the track laid from the quarry, upon which the cars of limestone are run upon a down grade. It shows the fire-holes and withdrawing holes, the shed surrounding the kiln, and the general arrangement of the whole. The lime is drawn from this kiln as from the one previously described, and as the unburned stone sinks down, more is thrown in from the cars, shown in the illustration. By regulating the chimney dampers, the heat may be kept low, or be raised, so as to burn the lime in 12 hours or less. Lime may be drawn every 6, 12, or 24 hours, and will cool ready for use in 12 hours. One part of coal to every seven parts of limestone is used in this kiln. Lime burned in it is free from ashes, and is perfectly calcined; it is therefore of extra good quality for plasterer's use. There is also an economy in fuel and in time in burning the lime. These advantages go far to offset the large first cost of the kiln, and the possibly greater cost of labor in operating it.

Cutting Ice in Shallow Ponds.

[illegible] shallow water, the ordinary ice-saw is very inconvenient. In such a case the following expedient may be adopted. Procure a worn out mill-saw, or a cross-cut-saw, with the teeth changed to the shape of rip-saw teeth, rivet to it a long handle, in a sloping direction, so that when in use, the saw can be worked almost horizontally as shown in figure 1. When the first cut is to be made, the axe is used to open a hole in the ice. The saw is then worked back and forth from the hole, in a slightly sloping or nearly horizontal direction, and ice may thus be cut when the water is not over six

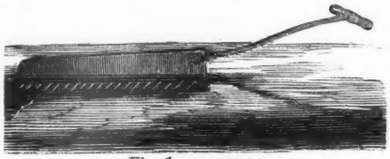


Fig. 1.—ICE-SAW.

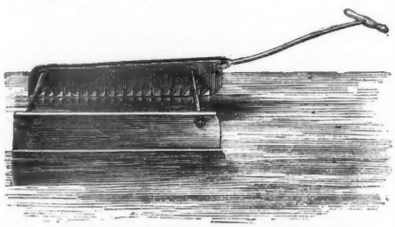


Fig. 2.—ICE-SAW WITH MARKER.

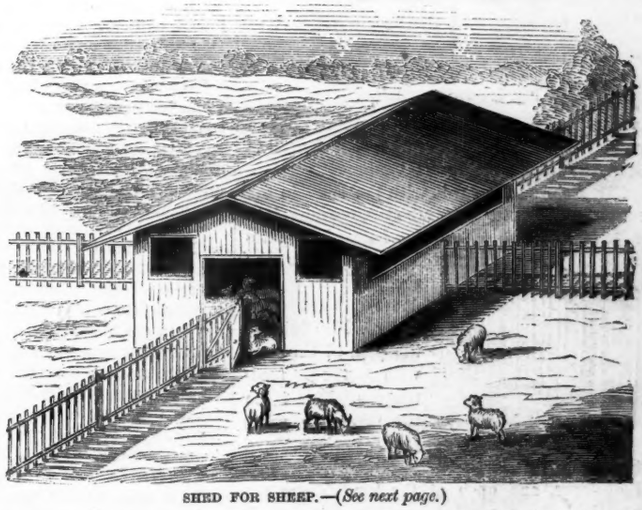
inches deep, without touching bottom. To make the blocks of even size, it is only necessary to fasten a piece of smooth board to the saw, and parallel to it, by iron rods and screw bolts, at such a distance from it as will be equal to the size of the blocks wanted, see fig. 2. With this, the lines of the cuts are marked out first, it is then removed and the blocks are cut. This form of saw we have found the easiest to use both in deep and shallow water; and a heavy blade with rip-saw or chisel-shaped teeth, such as a worn out upright mill-saw much the easiest to work with, as the weight rests upon the ice, and it is only necessary to push it forward and draw it back with a low motion, which is far less fatiguing than to lift a saw directly up and down, making an upright stroke.

The "White Sage" of the Far West.

The common names of plants are often quite puzzling, and it is frequently difficult to see their applicability to the plants which bear them. Especially is this the case in the newer parts of the country, where old and well-known names are made to do duty for plants quite different from those to which they properly belong. Thus on the barren plains of the Far West two or more species of wormwood are called "sage," their only resemblance being in the sombre color of their foliage. In the mountains of Utah, Nevada, and Colorado there is another plant known as "White Sage," which is quite as far removed from the sage of the Plains, as it is from the sages of the gardens. This White Sage is a plant of no little importance to the settlers in the regions where it grows, as it is often their chief reliance for winter forage. It was first described by Pursh, from specimens collected by Lewis & Clark, as *Diotis lanata*, but for good reasons it was placed in another genus, and its proper botanical name now is *Eurotia lanata*, and it belongs in the same family with the beet, the spinach, and the pig-weed. It is a half-shrubby plant, [illegible] with erect, somewhat herbaceous branches, and is from 6 to 18 inches high. The numerous leaves are narrow, and, as well as the rest of the plant, clothed with white hairs. The stamens and pistils are in separate flowers, and these are sometimes borne upon the same plant, and often on different plants; they are gathered into spike-like clusters at the ends of the branches. The engraving gives the appearance of a small branch of the natural size; at the left hand is a staminate flower closed, and one laid open, and on the right-hand side a pistillate flower and seed. The pistillate flower is surrounded by bracts, forming a sort of cup, which bears four dense tufts of long white hairs. In drying, the hairs turn brownish, and give the plant quite a different aspect from that which it has when fresh. Two other species of *Eurotia* are found in Asia, and it is thought that our plant may be a narrow-leaved form of one of them. The White Sage is found from the British possessions along the mountains as far south as New Mexico, and westward to the Sierras: it often covers large tracts in the elevated valleys, and on the driest land. Our correspondent, I. D. Pasco, Esq., whose farm is in Nye county, Nevada, at an elevation of 6,800 feet above the sea, states that there is before his door a "field" 25 miles long, and averaging 3 miles wide, where hundreds of horses and cattle are grazing upon the White Sage this winter, and are fat. He says that as soon as the grass starts in the spring they prefer that, but will even then take an occasional bite at the sage. In reference to its great value as a winter forage, the plant is in some localities called "winter fat."

THE WHITE SAGE.—(*Eurotia lanata.*)

The plant has a strong and unpleasant odor, and it is said to impart a peculiar and rather disagreeable flavor to the beef fed on it, a difficulty which may no doubt be overcome, by changing the food for a short time before slaughtering.



SHED FOR SHEEP.—(*See next page.*)

Soiling Sheep.

A "Virginia Correspondent" asks if it would not be practicable to soil sheep in yards much in the same manner as is done with cattle—to carry the food to them, and feed it in racks; as thus they may be made to serve as manure makers, and at the same time be protected from the dogs, which are so numerous as to prevent keeping sheep in fields. In such a case as this it is very probable that sheep might be kept as proposed, but it would be much less economical than to hurdle them in the fields. If hurdling is impossible, the next best thing is to keep them in yards near the barn. It has sometimes been done to prevent the trouble and expense of continually watching the sheep in the

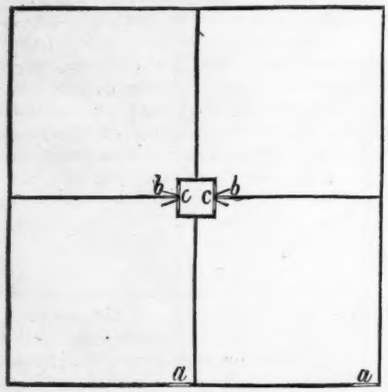


Fig. 2.—PLAN OF SHEEP-YARD.

field. The arrangement is as follows: A green paddock of about an acre is fenced and divided into four parts, as shown in the accompanying illustrations. A partly open shed with feed-racks all around it is placed in the center. For 50 sheep a building 20 feet square

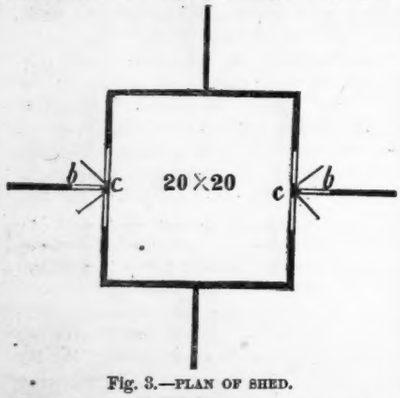


Fig. 3.—PLAN OF SHED.

is amply large. A door from each quarter of the paddock opens into this shed. As one quarter is used, the doors opening to the others are closed.

Fig. 2 shows the yards with the shed in the center. The outer gates are at *a*, opening into the lane. The gates *b*, *b*, lead into the rear quarters. The doors of the shed are at *c*, *c*. Fig. 3 shows the plan of the shed with the feed-troughs. Fig. 1 (on the preceding page) gives the elevation of the shed, with a large double doorway closed by half-doors, and open at the top. There are also large open windows, so that the shed is airy. There is no water in the yards, and this

Fig. 4.—DOG-GUARD.

we believe to be the best plan, as the yards are kept dry, and it necessitates at least so much exercise as will be derived from driving the sheep to water twice a day. The change of yards is needed to keep them dry and free from mud in wet weather. The crops that may be usefully fed in such a yard are rye, clover, grass, rape, mustard, peas and oats, barley and tares, turnips, or any others that are used when sheep are fenced by hurdles. A dog guard may be made by fastening projecting pickets, either horizontally or upright, and running two fence-wires through them. Figs. 4 and 5 show how these may be made. In such case the pickets are nailed to the fence-posts.

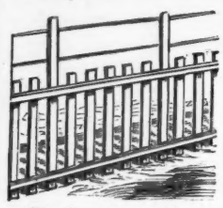


Fig. 5.—DOG-GUARD.

Tim Bunker on Hookertown Views of Mutton.

"It 'll keep a month," said Seth Twiggs, as he took his seat on the sill of the Meeting-house shed, crossed his legs, clasped his hands over one knee, and blew that long puff of smoke that indicates a pipe freshly lighted; "and that is a strong pint in any kind of meat in these days, when you have to pay two prices for everything you get out of the butcher's cart. In old times, you see, you could keep yerself in meat all winter by changing round a little when you butchered. But now every thing goes to the market, and every feller has to look out for himself."

"And they du it tew," said Jake Frink, "every time. Not much chance for a feller in this world, unless he's extra smart"——

"And lets licker alone," added George Washington Tucker, whose breath was perfumed with the odors of the only rum hole not yet cleaned out of Hookertown. "Not even cheap mutton can help a man who drinks."

"The man lies that says I've spiled a quarter of the licker you have," said Jake indignantly.

"Then again," said Seth, who was not to be switched off from the main subject by the mild palaver of his neighbors, "as Mr. Spooner would say, mutton is the best meat in the world, and the cheapest. You see them grades have run in my brush pasture all summer, and I don't believe the flesh they have laid on has cost me a cent a pound, for the pasture war'nt worth much anyway. Just kill a wether in December, and hang him up in the shop, and you can cut chops off of him a whole month, certain, and I guess all winter. My mutton allers gits eaten up so quick, that I never have a chance to know how long it would keep."

"Get a bigger kind of sheep," said Dea. Smith, "and you will have a chance to know. There is some difference between a skrimpy Merino that won't cut ten-pound to the quarter, and a Cotswold grade that will weigh twenty-five-pound to the quarter and upwards. Hang up such a carcass, and you could have roast as well as chops all winter."

"I shouldn't wonder if you're right, neighbor," said Seth, musing between the puffs. "Where grass don't cost much, you may as well have a big sheep as a little one, and mutton is about the same thing, greater or less."

"You are mistaken there," said the Deacon—"South-Down mutton, well fed, is much better eating than any of your small breeds. The Cotswold cross enlarges the carcass, and puts a little more fat into the rather lean South-Down meat. The lambs are larger, and you could send them earlier to market, and get a better price. I would not have a Merino sheep on my farm."

"The wool is fine," suggested Seth.

"I know," said the Deacon, "but there is next to nothing of it—and there is not such a difference between very fine and middle wools as there used to be. There is a good market for all the wool you can get from South-Down grades, and there is likely to be so long as woolen goods are used."

"And sheep are great on cleaning up brush pastures," said Jake Frink, who seemed to appreciate them chiefly as labor-saving machines. "You see I have not used a bush-scythe in my pasture for twenty years."

"You might say forty," said Tucker, "and no man would dispute you—guess there ain't such an article among your kit of tools."

"It's rusty, I'll allow," said Jake, "you see, the sheep have done the grubbing mostly, and a man don't like to waste any elbow grease."

This conversation of my neighbors at the fall fair on Hookertown Green, shows the drift of public sentiment on the sheep question. The fact is, we want more sheep—your wife wants them, and your children want them, and we must have them. The old cry of dogs will not do for this Commonwealth, for we have a dog law that keeps the curs under. They are roundly taxed, and if a sheep owner loses a sheep by dogs, he can present his bill to the Select Men, and get something like the value of those destroyed. This is fair, and, on the whole, fosters sheep husbandry. We cannot have any kind of stock without encountering some enemies—and running some risks. Dogs are not half so dangerous to sheep as skunks and weasels are to poultry. And yet we contrive to raise a respectable amount of chickens, ducks, turkeys, geese, and eggs, on almost every farm, and these little items help to swell the farmer's profits. The wool is a secondary matter, whether it be long or short, coarse or fine. We want sheep mainly for their flesh. It is a wholesome, well-flavored meat, and the dressing can be easily managed by the farmer himself, and with a little corning in summer, and none in winter, the carcass is readily disposed of. Farmers ought to eat more fresh meat, and would do so if they raised it upon their own farms. There is not so much temptation to sell mutton as there is poultry, for it only brings about half the price. It probably goes quite as far in sustaining muscle. Then sheep as fertilizers [illegible], a point not touched upon by my neighbors. Any pasture where they run is constantly improving in its capacity to yield grass. Brush dies out under the constant cropping, weeds disappear, and the green smooth sod remains, and grows ranker each year. This advantage is so great, that some very close observers say, the keeping of sheep costs the farm nothing. This is so. Then what we eat and sell from the flock is clear gain. Dea. Smith might have told a good deal more than he did about Cotswold crosses. The fact is, he sells lambs from South-Down grades by a Cotswold ram, that bring him on an average nine to ten dollars each, every summer. And they are all turned off in the early part of the season, while there is flush feed in the pasture. Then the wool from the old sheep is an important item. It averages about fifty cents a pound, and the fleeces are large. The fact is, the Deacon ciphers close, and I have watched him so close for so many years, that I am prepared to "go it blind" on any thing that he concludes to crop his farm with. I am fully persuaded that if any thing did not pay, he would find it out as soon as the next man. I have tried sheep, and know they pay better than most other stock we keep on our farms. Connecticut might quadruple its sheep with profit next year. Let us have more mutton-chops and less pork.

Hookertown, Ct., Jan. 1st, 1875. } Yours to command, TIMOTHY BUNKER, Esq.

Evergreen Trees from Cuttings.

The letters received, asking about growing Evergreens from cuttings, were referred to our correspondent at "The Pines," whose reply was included in the "Notes" sent last month, but were crowded out. He wrote: "I have been putting in quite a lot of cuttings of Evergreens, and I think if it were known how readily some evergreens were raised from cuttings, many more would grow them. I say *some* evergreens, as not

all can be propagated in this manner, but fortunately it is generally the case that the small neat kinds suited to small grounds, that grow most freely. Knowing that nurserymen have houses especially for the propagation of conifers, amateurs are deterred from attempting it in a small way. I have grown a few each year, for several years, as it is very convenient to have a stock of nice little plants to give away, or to use in exchanging with one's friends. Arbor Vitæs are among the easiest of trees to raise from cuttings. The common Arbor Vitæ is generally popular, but it is a waste of ground to grow this, if the

Siberian and Pyramidal Arbor Vitæs

can be had, as these varieties are quite as hardy as the original, and very much handsomer. As an illustration of the ease with which these Arbor Vitæs take root, last fall a friend sent me three small bits in a letter, for a name; though they had been cut two or three days, I stuck them in the sand of the greenhouse bench, and all three took root. To manage a quantity of cuttings, I use what the florists call a "flat," which is a box about 3 inches deep, made by dividing a soap-box. This is filled with sand, and in November cuttings about three inches long set in thickly, and the box put in the cellar until spring, taking care that it does not get dry during the winter. In the spring the boxes are set where they will be shaded during the heat of the day, and where they can be watered as needed, and in a few months the majority of the cuttings will be rooted. Other kinds can only be rooted by the application of heat, and if one has no greenhouse, a hot-bed can be made to answer. While some species root readily, others of the same genus do so with difficulty; sometimes a variety cannot be propagated by cuttings, while the type will readily grow in that way, and vice versa. All these matters can only be learned by experiment.

Blackberries in Indiana in 1874.

BY STEELE BROTHERS, LA PORTE, IND.

In accordance with the request of the Editor, we send some items about the varieties of Blackberries cultivated around here.

There are but two varieties much cultivated; the Kittatinny and the Snyder. There are some Lawton and a few Wilson's Early. All varieties bore abundantly this year. But it was the first full crop in three years. Last year all varieties were so much injured by the winter, that there were very few berries. In 1873 the Kittatinny did not bear at all. The Snyder not half a crop. The Snyder is a trifle more hardy than the Kittatinny, but not *perfectly* hardy with us. On our place they were killed the winter of 1871-72. And were generally so badly injured in the winter of 1872-73, that they did not bear half a crop. They were not killed outright like the Kittatinny, but grew and blossomed in the spring; more than half the canes, before the crop was grown, died, and the berries dried up. We picked the past season from two rows of Wilson's Early, each about 275 feet long, a little over 10 bushels of berries. Being so much larger and finer looking than any other kind, they sell very readily. But after people get acquainted with them, they almost always prefer the Kittatinny on account of its superior flavor. The Kittatinny, with us, will hardly average as large as the Lawton, neither is it here quite equal to it in flavor, when both are fully ripe. But the Kittatinny has the advantage of being eatable two or three days before it is thoroughly ripe, while the Lawton is *very* sour until it is just ready to drop off the bush. The Snyder is small, not averaging over two-thirds the size of the Kittatinny, nor is it equal to that in flavor. This we have proved by the following trial:

A young man who had known the Snyder from the first, was always praising its superior flavor. To test the matter, we picked a quantity of each kind, Kittatinny and Snyder, being careful to have them as nearly alike as possible in size, shape, and ripeness. We had him try them without knowing which was which. He decided that the Kittatinny was very much the best berry. And this is the general opinion, if prices are any criterion. This season the Kittatinny sold readily at 15 cents per box, when the Snyder only brought from 10 to 12½ cents. Some claim that the Snyder has not so much core as the Kittatinny. But taking both of equal size and thoroughly ripe, the difference in core is so small as not to be perceptible, except to a very critical judge. The Snyder has one advantage over the Kittatinny, it is a more vigorous grower, for the first two or three years. This, if set out in the spring, will bear a good many berries the next year. But the Kittatinny will not do much under two years. The *perfect* blackberry for us, has not yet been brought here. What we want is a berry that is equal in size and quality to the Kittatinny, and perfectly hardy. If it should be thornless, so much the better.

We stop our blackberry canes at from 3 to 4 feet from the ground, and never had any trouble with premature blossoming. We do this once, and then let the side branches grow all the season. The following spring we cut these back to about a foot.

The Respiration and Growth of Plants.

BY PROF. ASA GRAY.

In the Gardeners' Chronicle of Nov. 28, we have at length a clear and good abstract of Corenwinder's paper on Respiration and Digestion in Plants. Respiration, in plants as in animals, is an oxidation of the carbonaceous matters, and goes on continually, increasing or diminishing, however, with the activity or repose of the plant or animal. It is manifested, and its amount measured, by the giving off of carbonic acid gas. Digestion or assimilation is the reverse process as respects the storing up of carbonaceous matters, through the decomposition of carbonic acid, and is evinced and measured by the evolution of oxygen gas. In growing buds and shoots, and in forming foliage, the process of respiration is the most active. The plant—as we should put it—is then doing active work, and work means using up of material and force. Just as it costs the farmer a part of his crop to raise it and take it to market, so it costs the plant a part of its product to move and re-arrange its particles when it grows. This work is attended by the giving out of carbonic acid in increased amount, for the same reason that the breathing is quickened by running up a hill. In the developed foliage, outspread in the light, the work of digestion or assimilation is the principal thing; and the result is the making of material for growth. This work also uses up some already formed material, converting its carbon into carbonic acid; but this loss is unperceived, being masked and overbalanced by a far greater gain. For every one particle of vegetable matter which is now decomposed into carbonic acid and water and given out, probably twenty or thirty are recomposed in the assimilating process out of carbonic acid and water, and the oxygen of the former given out; so that the net result as to the air is the setting free of oxygen largely, as to the plant, the increase of vegetable matter.

Besides the carbonaceous elements, there is the nitrogenous matter and the phosphates, and the like. These play the most important part in growth and in all vegetable action. They are accordingly most abundant in young and growing parts, or in parts preparing for future growth. A Lilac leaf dried in April was found to have nearly 28 per cent of nitrogenous matter to nearly 65 of carbonaceous; a Maple leaf at the same season as much as 41 per cent of the former to 53 per cent of the latter; but in October the nitrogenous matter of the Lilac-leaf was reduced to less than 9 per cent, of the Maple-leaf to less than 15 per cent. The phosphoric acid had decreased in a similar way. These precious materials, having served their purpose in the young and growing parts, had been economized, had been largely transferred to other new parts, and finally accumulated and condensed in fruits and seeds, to provide for the nutrition of the next generation, or, in the grower's hands to serve for the nutrition of another order of beings. The practical moral is, that young herbage and foliage are more nutritious, as well as more palatable than when old, as we well appreciate in the cases of a salad, beet-tops, spinach, asparagus, etc.; but that fruits and grains offer similar nourishment in a much more condensed form.

The Stock and Cion—Peaches.

Upon more than one occasion we have expressed our belief that much of the variation in quality, size of fruit, and time of ripening, that we see in different specimens of the same variety, is due to the character of the stock upon which that variety was budded or grafted. This is not a mere matter of scientific interest, but it is a question of dollars and cents to every orchardist in the country, and more especially to the grower of peaches, to whom more than to the one who raises apples and pears, the difference of a few days in the time of ripening is of the greatest importance, and may decide the success of his season's business. In July last, we published important testimony upon this point from Col. Wilkins, the great peach grower of Maryland, and since then other facts have come to our knowledge which point in the same direction. A gentleman of wide experience in pomology, and an accurate observer, who, though he has withdrawn from active life, still continues his experiments with fruits, raised among other new seedlings a peach which he especially desired us to see; he forwarded us specimens of his favorite seedling, and in the accompanying note remarked, "The samples I send you are from a tree originally a Hale's, which I budded in '72; it is now a beautiful bearer, equal in form and vigor to its parent; but strange to say, the fruit ripens *at least three weeks earlier*. So much for the influence of the stock upon the graft."—This led to a further discussion of the subject in our correspondence, and we quote the following from among other matters of interest contained in the letters of the writer, whose name, were we at liberty to give it, would be recognized as one to whom pomology is largely indebted. He writes: "That the stock influences the time of ripening is most true, especially when the buds or grafts are set upon established trees. An acquaintance of mine, a good observer, and a nurseryman on a small scale, (Mr. Ross, of Westfield, N. J.), showed me two apple trees, side by side, which he had grafted with two pieces of the same cion; the variety was the King apple of New Jersey, which was then very rare, and having but one cion he cut it in two and grafted one-half with each. The stocks when grafted upon were some 3 or 4 inches in circumference; note the result: One of the grafted trees ripened its fruit six weeks earlier than the other! I have seen the trees and the fruit, and am sure that the old gentleman was to be perfectly relied upon." Our correspondent says further: "In regard to your views about grafting or budding upon *improved* stock, that is the result of good seed instead of the wild Virginia seedling, I am decidedly of your opinion—I use nothing else; still I cannot go so far as to establish the difference between cling-stones and free-stones for stocks. * * * To resume, I would say place a *sound, well matured* bud or graft upon a healthy stock, and one which as near as can be ascertained, of the same season of blossoming and ripening." There are other matters of in-

A SETTLER'S PLUMPING MILL.—DRAWN BY R. E. ROBINSON.—*Engraved for the American Agriculturist.*

terest in our correspondence with this veteran pomologist, bearing upon other controverted points to which we may refer at another time. In reading these letters in which the ripe experience of a long life is expressed almost with diffidence, we could not help regretting the modesty which shrinks from the notoriety of publication, while hundreds, as soon as they get, or think they have, a solitary idea, make haste to rush into print with it.

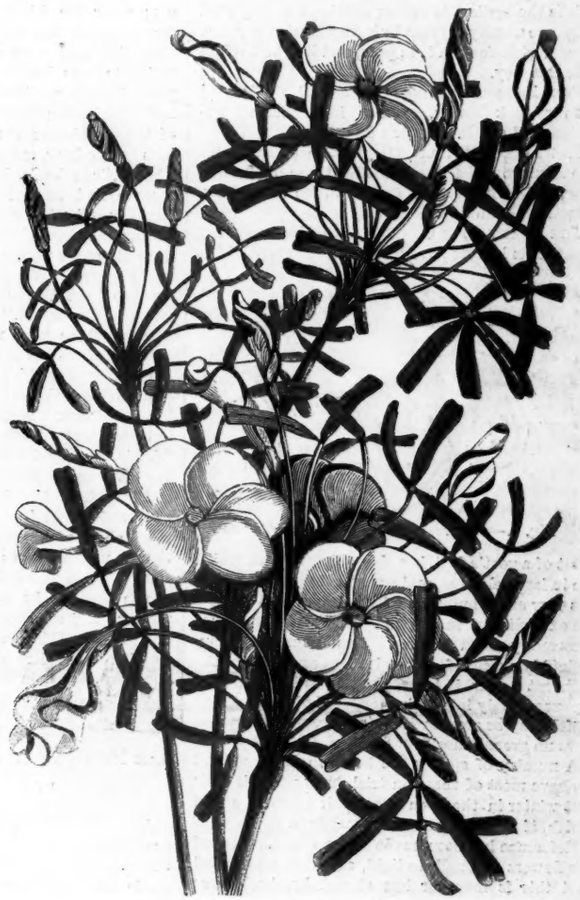
The Primitive Plumping Mill.

The early settlers in this country who had no mills, as well as the pioneers of the present day, who are at a great distance from them, were, and still are, obliged to resort to various expedients to bring Indian corn, their chief and generally only grain, into an eatable condition. Perhaps the simplest method of preparing the grain, is to make what is known as hulled corn; the corn is boiled in lye from wood ashes, until the hull or skin of the grain readily separates; it is then washed and stirred to remove the hulls, soaked in successive waters to remove all traces of the lye, and then boiled until tender. Even at the present day the Mexican peasantry prepare their corn in a similar manner; they remove the hull by the use of lye, and then instead of boiling the grain, they grind it to a paste on a stone called a *metate*, which is the chief article of furniture in every Mexican kitchen, (which usually includes parlor and bed-room); this is a slab of hard stone, about a foot wide, and two feet long, elevated at one end by legs. The soaked grain is placed upon this, and by the use of a sort of stone rolling-pin moved briskly up and down, it is ground to a paste; this is then patted out into a thin cake, and quickly baked upon an earthen or iron plate, beneath which are live coals. These cakes are called *tortillas*, and are the staple bread all over the country; they are sometimes made of wheat, but generally of corn. This method of using corn is purely Mexican, and no doubt derived by the Spanish settlers from the aborigines. While hulled corn is pleasant as a variety, and is at the present day sold in New England towns as a luxury, it becomes very tiresome as a regular food, and a poor substitute for corn cakes or bread made from meal. To obtain meal when a grist mill could only be reached by long journeys through the woods, over roads that were little more than foot-paths, or by a long voyage in a canoe or dug-out, the early settlers had recourse to the simple contrivance shown in the engraving. This is called the plumping mill, ("*plump:* to fall suddenly or with violence,") and is made by burning and digging out a cavity in a hard wood stump, until a rude mortar is formed; then a long and heavy pestle made also of hard wood, is attached to a long spring pole, and thus is formed a rude machine to be worked by one-man power. A slow and tedious method of obtaining meal, but one which many hardy pioneers have been content to follow until a better way could be found. It is a curious fact that the first patent granted in England, to the specifications of which drawings were attached, was for a kind of compound plumping mill, to be worked by horse or water-power, though some might find still more curious the fact that this invention was made by a woman. We have seen a copy of the original drawing at the Patent Office in Washington, which shows a row of 5 to 12 mortars, according to the kind of power used, the pestles were worked by a revolving shaft, the teeth upon which lifted the pestles and let them fall. The patent was granted in 1715, to "Thomas Masters, of Pensilvania, Planter, his Execrs, Admrs, and Assignees, of the Sole Use and Benefit of A New Invencon, found out by Sybilla his Wife, for the Clearing and Curing the Indian Corn Growing in the Severall Colonies in America, etc."

Wood Sorrels—Oxalis.

Every autumn we see in the seed stores a box or pan of tiny bulbs, none of them larger than a hazel-nut, and some much smaller, marked "mixed oxalis," and later in the season, when the hyacinths, tulips, and other bulbs, are nearly all sold, the oxalis bulbs seem to be about as numerous as at first. From this we infer that amateur flower growers do not purchase many oxalis bulbs, which we are quite sure they would do did they know the capabilities of these insignificant looking bulbs, and how much pleasure they can afford at a small expense. There are a few native species of oxalis, the common yellow-flowered, (*O. stricta*,) with its clover-like leaves on erect or trailing stems, is common everywhere, and often a weed in gardens, and two others, with leaves and violet or reddish flowers, proceeding directly from the root, are found in woods and rocky places. The majority of the cultivated species are from South America, and the Cape of Good Hope; some are shrubby, others are herbaceous, with fibrous roots, and others are bulbous-rooted; only the last-named can be procured at the seed stores, and there is among them a sufficient variety to meet the wants of the amateur grower, as they include species which have long and short stems, broad and narrow leaves, and white, yellow, rose-colored, crimson, and variegated flowers, some of which are fragrant. There are few flowers that do quite so well in window culture as when grown in the greenhouse, but with proper care the species of oxalis will be found quite satisfactory, and we can advise those who never tried them, to procure a few bulbs of each of the leading sorts next fall, as soon as the dealers receive their stock, as they need to be planted early—in September if they can be had. The pots need plenty of broken crocks for drainage, then some fragments of dry cow dung—say a fourth full, then good garden soil to fill the pot. One, three, or half-a-dozen bulbs, according to their size, are put in a pot, pressing them down sideways into the soil an inch or less, according to their size; then press the soil down firmly, and set the pot in a shady place; no water will be needed until the plants begin to grow, unless the soil should get very dry. When the plants are growing, give them plenty of light, and water according to their needs. When the flowering is over, and the leaves begin to fade, stop watering, and set the pots in a dry place where they will not freeze, and out of the reach of mice; the bulbs may be left in the earth until the season of re-potting; they will be found to have increased in number, some of them having bulbs far below the surface. Out of over a hundred species and varieties in cultivation, the dealers do not import more than six or eight, and then provokingly put them together, and sell them as "mixed oxalis." Insist on having the varieties distinct and named. Probably one reason why so few persons buy oxalis bulbs, is because they are offered in mixed lots; all sensible people wish to know exactly what they are buying, and if a plant has not a distinct name, they do not care for it. Mixed bulbs and mixed seeds are a nuisance in most cases. A few of the generally obtainable varieties are here enumerated:

THE GŒTHE PLANT.—(*Chlorophytum Sternbergianum.*)—(*See next page.*)



THE VARIOUS-COLORED OXALIS.—(*O. versicolor.*)

THE VARIOUS-COLORED, (*Oxalis versicolor*).—A pot of this in full bloom in the greenhouse reminded us to say a word in favor of these plants, and it furnished material for an engraving, which shows the free-flowering character of the species; for the convenience of carrying, it was tied to sticks, and was unfortunately drawn in an unnatural position. It has a remarkably drooping habit, and hangs over the sides of the pot in the most graceful manner, and is well suited to a suspended pot or basket. The leaves consist of three very narrow leaflets, notched at the end; the flowers are single on their slender stalks, and about an inch across. In all the species the petals are twisted or convolute in the bud, each having one edge directed inwards, and overlapped by the preceding petal, and its outer edge overlapping the next one, as in the diagram, (fig. 1), of a cross-section of a flower: this is not only the position of the petals in the bud, but that which the flowers take at night, and as most species open only in the sunshine, they are on cloudy days more or less closed in this spiral manner. When the Various-colored Oxalis is fully open, it is white within with a yellow eye; the under surface of each petal is white or slightly tinged with rose, and marked on the margin with a narrow bright pink or red line or stripe. When the flower is in bud, or completely closed, it appears as if entirely red, but when only partly

Fig. 1.—SECTION.

closed, these red lines make it beautifully striped. Though not so large-flowered and showy as some others, this is, to our fancy, the prettiest of all, as it presents in its buds, its partly open and fully open flowers, a pleasing and everchanging variety.

BOWIE'S OXALIS, (*O. Bowiei,*) is one of the largest and finest species; it has large, thick leaves, and flowers in clusters of 6 or 8 on a strong stalk; they are nearly two inches across, and rose-colored. This is the earliest flowering species, and imported bulbs are usually injured by having started to grow. Some florists furnish it in pots, and it is best to get it in this way.

THE FREE-FLOWERING OXALIS, (*O. floribunda,*) has rosy-pink flowers, produced in the greatest profusion, and continuing for a long time.

THE YELLOW OXALIS, (*O. flava,*) has leaves with 6 to 10 narrow leaflets, much like those of *O. versicolor*, and large solitary flowers which are yellow, sometimes with a reddish edge.

THE GOAT'S-FOOT OXALIS, (*O. caprina,*) so-called because its leaflets have somewhat the shape of the

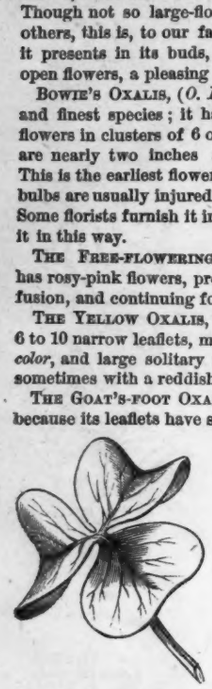


Fig. 2.—OPEN.

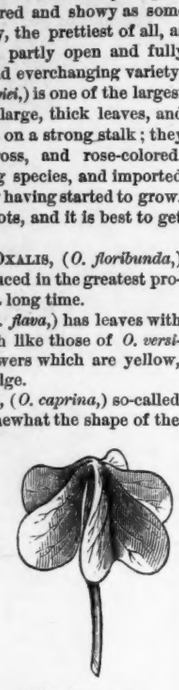


Fig. 3.—CLOSED.

print of a goat's foot, has also yellow flowers, which are in large clusters, and somewhat fragrant. This has very small bulbs, and both leaves and flowers are exceedingly sensitive to light. This is sometimes incorrectly called *O. flava*. This list might be indefinitely extended, but as it gives examples of the different colors, it is sufficient to call attention to an exceedingly interesting genus of plants, and one which may be grown with fair success by those who have no greenhouse.

A number of species are hardy in England, and we have most of these on trial, but as this is their first winter in the open ground, it cannot be said which, if any, will endure our winters.

Reference has been made to the sensitiveness of the flowers of Oxalis to light, and it may be added that this is more or less shared by the leaves; which in almost all species take up a sleeping position at night; the leaflets droop and fold, and in some the leaf-stalk also droops. In the accompanying diagrams, fig. 2 shows the day, and fig. 3 the night position of a leaf.

Window-Gardening.—The Gœthe Plant.

Some two years or more ago we were looking through the greenhouse of a friend, who stopped before a plant much like the one shown on the preceding page, as the Gœthe plant, and said, "There is a capital plant, which you ought to write up and make popular."—He picked off a couple of the little offsets borne upon the pendent stems, which were taken home and planted. Since then they have been growing on quietly in the greenhouse, and were nearly forgotten, until an article in the Gardener's Magazine brought them to mind; the plants were looked up, and as they were not so well grown as the one figured in the Magazine, we have re-produced the engraving of the English journal. The plant in question has for its name *Chlorophyton Sternbergianum;* chloro-phyton means simply green plant, not very descriptive surely, and a translation of the whole name would be "Sternberg's Green Plant"; but fortunately it has received a pleasanter name than that, and it is known in England as the Gœthe plant, for the reason that it was a favorite with the poet, who admired its patient endurance of the dry air, dust, and other troubles, that beset a plant kept in a window the year round. The plant belongs to the Asparagus Section of the Lily Family, which includes the favorite Dracænas, and that very beautiful and popular climber, *Myrsiphyllum*, which is so generally known as Smilax. The genus is a native of Africa and Australia, and contains but few species. This has graceful foliage of a fine green color, but the peculiar thing about it is its flower stems, which are very strong and slender, one or two feet long, and bear small and very inconspicuous white flowers; after the bloom is over, the flower-stems throw out young plants or offsets, as shown in the engraving, and these again produce flower-stems, which in turn bear other offsets, until on an old plant there is produced a perfect mass of threads and bright green tassels. In the moist atmosphere of the greenhouse the little plants form roots an inch or two long, and the plant propagates itself. The article in the Gardener's Magazine, to which reference has been made, is by a correspondent, Mr. Trussler, who has some very sensible talk upon window-plants, which we should very gladly reproduce did space permit; he restricts the number of really useful window-plants to a very few, and speaks of the Gœthe plant as the "best window-plant in the world." He criticises with proper severity those who write works upon window-gardening, and run through the whole list of greenhouse plants, "which are no more fit for window-culture than the oak-tree, the teazle, or water-lily," a remark which will apply to similar works in this country. For the benefit of our Philadelphia friends, it may be remarked that the "German Ivy" is placed among the select window-plants, and is spoken of as *Senecio scandens*, and not *Mikania scandens*. It is contrary to our custom to say much about plants that can not be readily obtained, though we sometimes do, as in this case, bring forward a plant that our florists ought to have. We advise them to import a stock of *Chlorophyton*, as they are very sure to have a demand for it, as it is one of those things which, if well grown, will sell itself. Our readers need not write to ask who has the plant, as we do not know, but any wide-awake florist will soon be able to supply their demands.

The Fumigation of Plants—Its Dangers.

BY PETER HENDERSON.

A lady has given me a "piece of her mind"—she has fumigated her plants and taken off every one of their leaves. As I recommend fumigation, she regards me as the cause of her trouble, and she expresses herself to that effect in words that I need not repeat. I have insisted upon, and do still maintain the need of fumigating with tobacco, not only to destroy that pest of the plant grower, the green-fly, and other insects, but to prevent their getting established. I have been particular in my advice to use it regularly twice a week, at the rate of about half-a-pound to every 500 square feet of glass, and I still adhere to this as the best and easiest way of keeping a greenhouse clear of insects. If Dr. Jones leaves Pat Molloy some pills, of which he is to take one every three hours, and Pat not only takes them all at once, but takes also whatever other pills he can find about the house, he will do very much as my correspondent did, and the death of Pat would follow not less certainly than that of the lady's plants. She had insects on her plants, and was bound to fix them, so she not only burned any quantity of tobacco, but, as she writes, "some sulphur." Her success was complete, for not an insect remains to feed upon the green pastures afforded by the leaves of her plants, and so thorough was the work, that the pastures are as leafless and dry as a maple grove in December; and for this the lady thinks I am to blame! While professional gardeners find fumigating with tobacco the readiest and safest method of ridding the plants of insects, it sometimes happens that amateurs, from not following the directions, or from want of experience, injure their plants. Such had better make use of tobacco in some other form, and we give two methods, which will be found quite as efficacious as smoking. One of these is tobacco in the liquid form, prepared by steeping one pound of tobacco stems, (such as are usually thrown away by cigar makers,) in about five gallons of water, this gives a liquid about the color of strong tea, which, if syringed over and under the leaves of plants twice a week, will effectually prevent any injury from that pest—the green fly. The other is to use tobacco dust, which is the sweepings of tobacco warehouses, and a very cheap article. This is most effectively applied on rose bushes or other plants out doors in the morning when the dew is on, or if used upon plants in the greenhouse, they should first be syringed, so that the dust will adhere to the leaves. No special quantity is required, only care should be taken that the dust is distributed among the leaves pretty thoroughly, as no injury will result to the plants from its application, no matter how much is applied.—For insects upon fruit trees, roses, and other shrubs, outside, tobacco dust is an excellent and cheap application. It is sold in quantities as low as $5 per hundred pounds, and is retailed in packages at 10c. per lb, by most of the agricultural and seed warehouses. I must here enter a protest against the use of the fumes of burning sulphur in the greenhouse. When sulphur is sprinkled upon the hot-water pipes, or upon that part of a flue, the temperature of which is not much over 200°, it slowly vaporizes, and may be used with benefit, but when set on fire, as was done by my correspondent, whose disastrous experience called out this article, the most corrosive acid fumes are given off, which, in even small quantities, are destructive to plant life. I remember a case in which the person in charge of a grapery, loaded with nearly a ton of ripening fruit, wishing to destroy the red spider that had begun to attack it, opened the door at each end of the house, put a pound of sulphur on a red-hot shovel, and walked through the house with it. Every leaf and every bunch of fruit were destroyed, and the vines permanently injured. Don't *burn* sulphur in a greenhouse.

SPARROWS AND FRUIT-GROWERS.—Many Europeans have predicted that the introduction of sparrows into this country would ultimately be regretted. That they destroy insects there is no doubt, but their work is not entirely beneficent; and melancholy accounts have been told of loss to the farmers by the havoc the sparrows make in their grain. In France the sparrow appears as an enemy to the pear-grower, and unless the trees are at a long distance from any houses, the sparrow being an eminently stay-at-home bird, they often have during the winter their fruit-buds attacked by the sparrows, and one case is mentioned in which the trees upon a place, which usually produced an abundance of pears, one season did not show a single flower, every bud having been destroyed by these little birds. Their attacking the buds has been attributed to thirst, but in this case a stream ran the whole length of the orchard. Prof. Levesque, of Cherbourg, in experimenting with methods of preventing this trouble, found that when the fruit-buds of the trees were painted over with red lead and water, the birds would not touch them. That method will do for France, where pears are reckoned by the dozen, but with us who estimate by the barrel, it would be of no use.

Cheap Manures for Market and Farm Gardens.

BY J. B. ROOT, ROCKFORD, ILL.

We frequently read that "out West" the farmers burn their straw, and move their barns to get away from the manure. I am so unfortunate as not to live in such a neighborhood, but on the contrary, find my neighbors just as anxious to "buy, beg, or steal" manure, as I am, so that after getting all the stable manure I can, I am still short, and compelled to seek other fertilizers. While using in greater or less degree all of them, none have proved so cheap and so profitable as green manuring, *i. e.*, growing crops to be turned under before maturity.

In sections where clover does well, that is of

course one of the best, but in this latitude rye has been my most profitable green manure, and I think is especially adapted to gardeners' needs. Some years ago just at planting time, I found myself short of suitable land for still another variety of seed melons, which I was obliged to grow, and leased ten acres of land upon which was growing a crop of rye. I turned under the rye with a chain on the plow, about the middle of May, and planted Nutmeg Melon. The occasional straws sticking up, gave the field a ragged appearance for a time, but when the mid-summer drouth was upon us, and other fields succumbed, this one looked as fresh and vigorous as could be, and in fruiting even excelled the promise its appearance gave. The yield of seed was more than one-half larger than on similar land in good heart, but not green manured. I have practiced green manuring ever since, and always with satisfaction. Its benefit seems to be due not only to the available fertility it furnishes, but also to its mechanical effect on the soil, and thus maintaining moisture through our worst drouths. I sow rye thickly—about 6 pecks to the acre—and early if possible, so that the plants shall stool out before winter, endure the exposure better, and make a quicker and larger growth in the spring. If any coarse manure can be spared, we spread it broadcast during the winter. It protects the rye from winter killing, and like all winter and spring top-dressing, induces increased growth, and both directly and indirectly helps the subsequent crop.

Rye seems especially adapted to the farm gardener's use, since a large portion of his crops are out of the way in time to sow it, and moreover a number of tender vegetables can not be planted until well into May, by which time the growth is as large as can readily be turned under. In this way it utilizes the land during that portion of the year, when it would otherwise be idle, and in which no other crop can be grown. Upon the farm too it comes in nicely, if the succeeding crop is to be corn, roots, or late potatoes, and more particularly sowed corn for fodder, for which it seems to be especially adapted. Even after corn I succeed well with it, sowing it broadcast and cultivating it in leaving the corn hills standing, as they gather snow and help to protect the rye in winter.

I have sown peas—common field varieties, Marrowfats, or any damaged seed of tall varieties—after early potatoes, even as late as middle of August, and when at their largest, some time in October, turned them under, and used the ground for early spring planting, and found it excellent. It is superior to rye only in this respect, that the ground is available for the earliest plantings.

Buckwheat makes an excellent manure, when the ground is ready for it in season, being of quick growth, great bulk, and permeating the soil with roots, while the tops cover the surface and choke out all weeds; but it must be grown and turned down between frost and frost, at just the time when every foot of the gardener's soil is occupied, so that I have found but limited use for it, except on very poor soils which were unavailable until more heart could be given them.

Sowed corn is subject to quite the same commendation and criticism. Each is excellent in fitting land for turnips, grown in place of a summer fallow. Upon land too poor to sustain a crop, being a light gravelly soil with little vegetable matter, I have sowed corn thickly in May, and turned it under early in August, and then sowed Marrowfat peas, which were turned under early in November. These gave sufficient substance to the soil to mature excellent crops of lettuce and flower seeds the next season, receiving in addition a slight top-dressing of fine manure. I think green manuring especially valuable on light soils.

Of course I would myself, and would recommend to others to get every fork full of manure to be had, and apply it. And yet upon the same land I would in addition apply green manure whenever practicable. The labor of applying evenly 40 loads of manure per acre, is considerable. All this is done more evenly by the green crop. Seed and labor together, cost me but $3.50 per acre. I can not say that it adds as much fertility to the soil as 40 loads of manure, but I do say that in our drouthy seasons, it produces as great an increase of crop as do 40 two-horse loads of good manure. How much of this is due to its ability to resist drouth, and how much to increased fertility, I can not say. It certainly pays to practice it, and to practice it largely, even on the land well supplied with stable manure, as that increases the vigor and growth of the green crop, which is immediately with additions returned to the soil.

All these crops are so heavy that they must be "chained down," *i. e.*, a heavy chain is hung from the end of the whiffletree cross-bar to the plow beam, with slack enough so that it drags just ahead of the uprising furrow, and thus pulls down every stalk into the empty furrow as nicely as it could be laid by hand. With this as much can be neatly covered as the empty furrow will hold.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

"Sex in Education."

Those who have daughters to educate, ought to read this book. It is not a new one, having been before the public at least a year, but it has just fallen to my lot to give it a careful reading—the more careful because the notices of it which I had seen in the papers, were mostly calculated to prejudice me against it. But the book seems to me a very useful one, and I should suppose that its author has at heart the true happiness of woman, as well as the welfare of the race in general. He would not limit the intellectual advantages of women, but he would so arrange these, that girls would feel encouraged to exercise and cultivate their minds in such ways as do not conflict with their natural and healthy development as women.

There are so many other things that hinder the healthy growth of girls, and destroy the womanly powers of women, that it seemed at first a little cruel when Dr. Clarke, of Harvard University, pitched upon this particular one—a wrong method of education—and spoke so strongly. But he sees clearly the other causes of woman's ill health, and speaks cordially of the new dress reform movement, and of the need of dietetic and social reforms. He takes one thing at a time—sex in *education*—and writes as though he has no "fear of falling into his own ink-pot," as Emerson says. It is no part of his work in this volume, to discourse of the evils that war against womanhood in later life, so a few criticisms which some of us elderly over-worked women have made, were uncalled for.

The law made plain by Brown-Sequard, in his lectures on the nerves—that *the human body can not do two things well at the same time*—is the basis of Dr. Clarke's argument. He thinks that one reason why women suffer very greatly from all manner of distressing female ailments, is because girls are put to school and required to do too much brain work, and to do it too regularly and persistently during those years, between thirteen and twenty-five, when nature is seeking to develop and perfect in them, that wonderful reproductive apparatus, so essential for their own happy destiny as women and as mothers of the human family.

It is to be hoped that those who read the book, will have sense enough to apply the laws of health and growth there explained, to all departments of education, physical, moral, mental, social, industrial, etc. Though a very useful book in its way, and at this time, it is by no means "the whole truth, and nothing but the truth." I did not find in it that "coarseness," and "insulting tone toward women," which some women have professed to discover—less coarseness indeed than in some of those reviews. The author does not write as one who thinks of women as "weighted by her sex," in the race of life, nor does he seem to consider woman entirely from the physical stand-point. He speaks of essential and distinctive womanhood, as a source of great and peculiar power, in intellectual and spiritual life, when *it*, (or sex itself), is not "weighted" by excessive burdens of labor or care. In speaking of the delicacy and dangers that accompany womanhood, he also speaks of its *corresponding privileges*, which none can understand better than those mothers, however poor and sick, who sometimes feel the most tender pity for fathers, because they can never possibly know the wonderful sweetness of little babes, as such mothers know it. He deserves the hearty thanks of cultivated women, for his testimony from his own medical experience, that maternity is not generally *unwelcome* to educated women.

A Rustic Porch.

Speaking of Rustic Porches, (*vide, Agriculturist* for Dec. 1874, page 462). I wish I had a sketch of the very simple but very pleasant porch over the doorway of a log-house, where some of the earlier numbers of these papers were written. I meant to make a drawing of the pretty cottage—pretty because symmetrical in shape, and ornamented by so tasteful a porch—but when I sat out upon the lawn admiring it and its forest background, I always had a babe in my lap, or close beside me. That is not the only log-cabin where the *Agriculturist* is taken, and for the help of log-cabin readers, also for the edification of those who wonder whether there truly can be such a thing as "love in a cottage," and dare not experiment for themselves, let me try to describe that little porch. Judging from memory, I think it was only five feet by three, the outer posts being set three feet from the house wall, and five feet apart. This gave room for two short low benches, each side the doorway, set facing each other. The posts were unpeeled tree-stems, four or five inches in diameter. There were four of these in front—the two corner posts and two between these, each a foot from the corner posts, or three feet apart. The whole—the sides and front—except the opening in front three feet wide for a passage, was enclosed with a coarse lattice work of unpeeled hickory twigs, from an inch to two inches in diameter. These twigs were nailed diagonally from post to post, about eight inches apart, interlacing each other, making diamond-shaped openings or lattice work. Two posts set against the house wall, five feet apart and opposite the front corner posts, with poles across from one to another, the front posts being a little shorter than the ones next the house, gave the support for a slightly sloping shed or lean-to roof of boards.

There are few cottagers so poor that they can not have such a porch, for it is very quickly made, as well as cheap in materials. The house was pleasanter, even in mid-winter, for the presence of the porch, and in summer, when the wild cucumber vines and morning glories clambered over it and upon the roof, it was truly "a thing of beauty."

Patterns for the New Under-garments.

The Dress Committee of the N. E. Women's Club, advertise that they have taken rooms at 25 Winter street, Boston, Room 15, over Chandler's dry goods store, where they may be visited in business hours, or addressed by those wishing patterns or information. The price for a pattern of the chemiloon or the gabrielle underskirt, (or any single garment, I believe) is twenty-five cents. They also have cotton and woolen chemiloons for sale.

A reader of the *Agriculturist* has sent me patterns and a cambric model, of a combination garment of her own invention, which she calls the "Emancipation Suit." It is similar to the chemiloon, with the addition of a gored underskirt attached at the waist. The waist of the garment is cut quite long, and somewhat basque-shaped, goring out over the hips. The fronts are cut away over the bosom, and a full strip inserted—like an unlined yoke waist with a very wide belt—a belt shaped by the darts of the basque. These patterns are kept for sale by Susan Taylor Converse, of Woburn, Mass., I do not know their price.

I see that Mrs. J. G. Swisshelm, of Chicago, also comes forward as an inventor of a garment, which seems to be a combination of shirt and drawers,

which she calls the "chemlin." She also has patterns for sale—price twenty-five cents.

Without doubt, scores of other inventors of this sensible sort of undergarment might be hunted up.

Twelve years ago I made myself two cotton-flannel suits, which were high-necked waists and long under-drawers combined. I thought then that I showed my good sense by making the sleeves long enough to reach my elbows—for in those days a thin muslin or lace undersleeve was considered sufficient protection for a lady's arm below the elbow. It does seem now as though woman is at last to be *clothed*, and in her right mind. Hitherto the female human body has been made subservient to the display of drapery and trimmings. Before long we shall have it really clothed from head to foot, and then, when we show by our deeds that we believe that "the body is more than raiment," (here is a text for the Rev. gentleman who sent to the *Agriculturist* office for patterns of the garments mentioned in the December Topics,) then we shall begin to have some clear ideas of real beauty.

White Gems should always be made of the *best* of fine flour and new milk, with a little salt, beaten well together into a stiff batter, too stiff for griddle cakes—or into a soft dough, too soft for biscuit—and baked in a hot oven in gem pans, made hot before the dough is dipped in. These are the best of "warm biscuit," I think. You *can* put in baking powder, but do try them without.

Milk-Pans.—A Farmer's Wife writes: If the lady who thinks her way best for washing milk-pans, in a former No., will use a flannel cloth in the lukewarm water, she will find that it will facilitate the labor.

The Flying-Goose Patchwork.

I have been asked to give a description of "the flying-goose," and (as I think it is the very prettiest pattern for a silk quilt), I will endeavor to do so. Take two squares of silk, one light and one dark, about three inches square, (larger if you choose,) double each square diagonally across the center, and cut it in two. You have now two pieces of light, and two pieces of dark. Divide each piece of *dark* silk again in two. Join them as in fig. 1. Plain silks produce a better effect than figured ones. Join the sections as in figure 2. Each stripe should be uniform in color: e. g., light yellow center, maroon corners; — pale-pink center, dark-grey corners; — light-green center, dark-brown corners. Do not join your stripes together until you have enough of them completed to make the entire quilt; then lay them on the bed, and arrange them artistically to suit the eye before you attempt to sew them together; for you will find you will have to change their positions very often before they will quite suit you. When you are making them, the gentlemen will probably say "What in the world is the use of cutting all those pieces of silk to bits, just to sew them together again?"

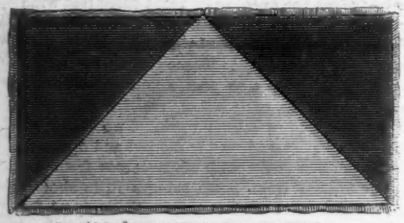


Fig. 1.—MAKING THE SECTION.

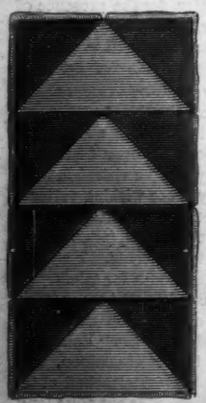


Fig. 2. SECTIONS JOINED.

But might you not better be doing that than nothing? And is there any nicer present—for the baby's crib,—for Papa's sofa, or for Mamma's bed—than a silk quilt? Fig. 3 gives you an idea of how the stripes look when sewed together. The number of stripes required will of course depend upon the size of your original square. A. S. N.

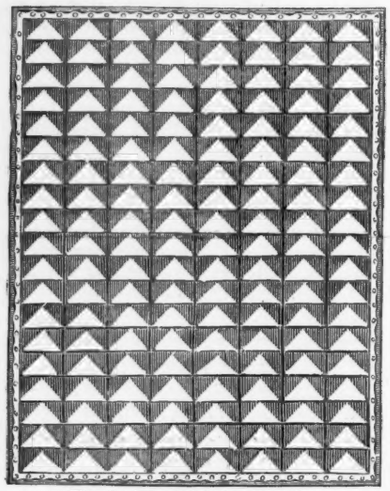


Fig. 3.—THE QUILT COMPLETE.

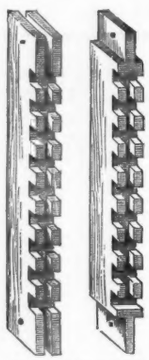
Kindling Fires—"Fools vs. Philosophers."

The trite old saying has it, that "it takes a fool or philosopher to build a fire well."—How this adage originated, or why it is used, we can not tell; perhaps it means that a fool blunders into it, and the other party does it "philosophically." Fire-heat is produced—or evolved, brought out, made sensible—by a chemical combination, that is, by the union of the oxygen of the air with the carbon or coal of the wood. These two elements combine, producing carbonic acid gas, which goes off into the air in an invisible state, and the union of the two gives out heat that was before *latent* or insensible. Only one-fifth part of the air is oxygen. The other four-fifths are nitrogen, a substance that does not unite with the wood, and therefore it does not help send out heat. To make fire burn faster, we blow it, that is, drive more air upon it, and of course more oxygen. (The chemist sometimes makes an artificial atmosphere of oxygen, containing no nitrogen. In this wood will burn intensely, and even a piece of iron will burn in it.) To save blowing with our lungs, or with a bellows, we construct chimneys or stove-pipes. Warm air is lighter than cold air, and rises up just as light substances rise in water. As this air rises in the confining pipe or chimney, cold air rushes in to take its place below—it is thus *drawn in* instead of being blown in. This draft, bringing more air and therefore more oxygen, makes the fire burn faster.

In starting a fire, the thing to be aimed at is, to make the air drawn in by the upward draft *concentrate just where the fire is still feeble.* In a stove or furnace put the kindlings, and start the fire close by the small opening, so that the inward draft will and must strike right upon the point where the fire is kindled. If it be started back a few inches, only a part of the incoming current will hit the fire, the rest will go round it. In a fire-place, put the larger sticks in rear and front, and so arrange the small stuff that the rising current of air will be compelled to come right through it. Arrange the larger fuel to be ignited so that the first fire will be drawn between pieces lying near enough together to help warm each other. Very often, when a fire is to be started over a wide grate in a stove or furnace, it is well to cover up part of the grate with flat pieces of wood, or ashes, or paper, so as to concentrate the draft of air at the point where the fire is to be started. As it increases, the wood or paper will be burned out, or the ashes can be raked out. In a broad bottom furnace, we often fill up one side, or all around the outside, with ashes and cinders, during warmer weather, so that in the remaining portions there will be draft enough to keep up a small fire. By noting the philosophy of concentrating the draft, above referred to, one can kindle a fire quickly and with a very little fine stuff. Unreasoning "help" often use a large basketful of kindlings, prepared with no little labor, or a peck of charcoal, to get a hard-coal fire started. By showing them the proper arrangement of fuel, a small quantity of shavings or splinters, with a few larger pieces of wood or charcoal, placed in a compact mass, and so that the current of air will strike them, will produce heat enough to ignite the hard coal immediately in contact, and that will soon extend a strong heat to the whole surrounding mass. A slight covering of fine ashes upon the surface of the hard coal, except right over the kindling point, will greatly help starting the fire. After the coal is well ignited through at one point, the ashes will drop down, or can be easily stirred out from below. We have often started up an almost extinct coal fire by spreading a few flat chips over the top, except just where there was a little fire left, as this concentrated the draft there and started it into new vigor. These are small items, some may think, but it is better to be the "philosopher" than the "fool"; and further, aside from the saving of fuel, how much is often lost in the morning's comfort, and in the day's business, because "the fire wouldn't start this morning."

The Daisy Mat—How to Make It.

The Daisy mat is made of Berlin wool, floss-silk, or cotton embroidery thread, or similar material that may be frayed out with a comb, to form the daisies and the fringe. It is made upon a frame either square, oblong, oval, or round. The frame are made of four strips of wood, an inch and a half wide, an inch thick, and twelve inches long; these are grooved upon one edge with a common grooving plane, such as is used in matching flooring boards. The grooved edges are then notched with square notches, regularly and evenly an inch apart, and the ends of the strips are fastened together to form a square frame, as shown in the figures 1 and 2. The complete frame is seen in part at fig. 3. The mat is made by taking the wool or other material of selected colors, wound for convenience into balls, and lapping it across the frame into the grooves; about 25 threads of coarse wool are needed in each lap and groove. With finer thread more will be required. When the frame is covered one way, it is lapped the other way, so that the laps cross each other. In lapping, the threads should not be stretched, but kept moderately loose, or the mat will shrink when finished. Then with a coarse linen or silk thread, the intersections of the laps are tied tightly, by crossing the threads, as shown in fig. 3, from *a* to *b*. It will much facilitate this work, if a coarse needle is used upon the thread, by which it is passed between the laps. When every crossing is securely tied, always upon the back of the mat, the frame is turned, and upon the other side a sharp-pointed pair of scissors is passed through about three quarters of the threads of the lap, exactly in the center between the ties. Three-fourths of every lap is thus cut through, at the front or upper side of the mat, exactly half way between the tie threads or intersections of the laps, as seen at



Figs. 1 and 2. FRAME.

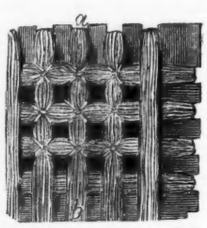


Fig. 3.—MAKING THE MAT.

fig. 4. The short ends of wool thus made, form the rays of the daisies, and when these are combed up with a fine-tooth comb, the edges become somewhat frayed, and form a ball very similar to the center of the flower of a daisy. The threads are then cut with a sharp penknife, all around the frame in the center of the groove, which frees the mat from the frame. The fringe around the edges is then combed out, and the mat appears as in fig. 5. By choosing proper colors and material, very handsome mats for various uses may be made. White floss-silk, or cotton, will make beautiful toilet mats, sulphur yellow also makes a delicate mat. Green and orange, red, white, and blue, or other mixtures of wool, make useful lamp mats, or table mats for vases, clocks, inkstands, and a very large variety of other uses. These mats may be washed many times, will stand very rough usage, and if securely tied, are almost indestructible by ordinary wear. The mat from which fig. 4 is drawn, has been in use since 1855, and is now as good as new. After being washed, the mats shrink somewhat, and are improved both in appearance and for service. For each size of mat, a different frame is needed, and by using a large frame with two-inch notches, woolen rags may be cut into strips as for rag-carpet filling, and used to make very serviceable door mats and rugs.

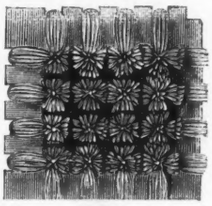


Fig. 4.—MAKING THE MAT.

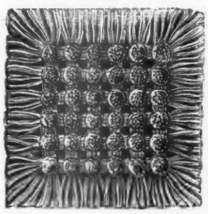


Fig. 5.—MAT COMPLETE.

When to Eat and How to Cook Cabbage.

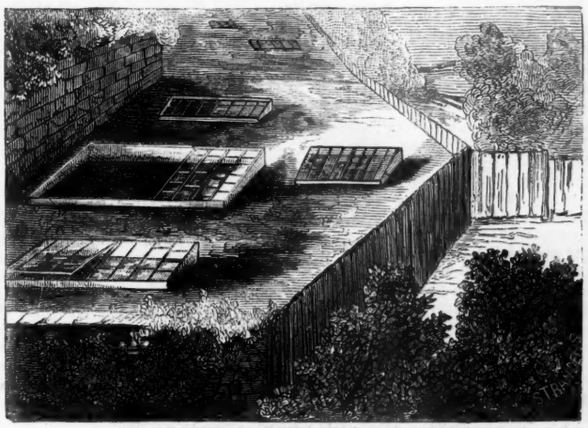
Faith Rochester writes in reply to a note from the editor: Did I plan to have cabbage for breakfast in that bill of fare for a week, I sent off last week? I do not remember. I asked the family at dinner to-day, "Did we ever have cabbage for breakfast?" and no one could remember that we ever did, but I could see that no one of them thought there would be anything improper in the proceeding. I remember that two things in particular interfered with the carrying out of that programme. One of the little ones took cold and was quite unwell, and ate very little of only the simplest food, and one went over to grandpa's for a few days, so that there was an unusual amount of "warming over" that week. Then grandpa brought us a chicken, which made two meals.

The editor "pitched into" me as follows: "Cabbage for breakfast! Shade of the departed Blot! But why did you not say how—raw—boiled—or that abomination to the nose and the stomach—fried. Cabbage for breakfast for women and babies should not stand unqualified and unexplained. I am not making fun at you, but really desirous to know how a woman who talks about hygiene, physiology, dress-reform, stomach-reform, and all—does eat cabbage for breakfast, if at all."

I suppose that the editor dresses his cabbage with vinegar, or has it cooked with vinegar—as we never do. [Nor we.—ED.] I should like the taste of it, but one tea-spoonful of it (or any preparation with vinegar) would surely give me a sick headache, as I learned long ago by repeated experiments. Of course it is not so with every one.

We like our cabbage cooked like cauliflower, and it is almost as good. It is cooked with milk, and I never dreamed that it was unwholesome. Like most vegetables of the kind, there is not much nourishment in cabbage, and it could not be substituted for graham bread or meat, but used with either, it supplies wholesome vegetable juices, and if palatable does good, as every harmless thing does which helps to make up a pleasing variety. Is it not so, my critical friend?

And why not for *breakfast?* I have lost my copy of that bill of fare, and the Jan. *Agriculturist* (which will contain it I suppose) has not yet come to hand. I wonder what other dishes were to be eaten at the same meal. Gems of any kind, or anything that will go well with cauliflower or turnips—as potatoes and beef. If cabbage (cooked as we cook it) seemed to me so hard of digestion, as it appears to be reckoned by the editor, I would as soon eat it for breakfast as for dinner. [Cabbage is one of the most nutritious as well as one of the most indigestible of vegetables, and quite unfitted for persons with weak stomachs. It contains about 92 per cent of water; in the *dried* state 83 parts of cabbage contain as much nutriment as 100 parts of wheat. When eaten raw, it digests in half the time it does when cooked.—ED.] It is a common experience with persons who get accustomed to two meals a day, that the heartier meal works best in the morning. "Grandpa"—who has had a life-long tug with his stomach, but who by great carefulness in late years has come at last to be stronger and healthier than ever before in his life—often says, "If I am going to have cake, give it to me in the morning, so that I can work it off." For supper he wants only his bread and butter, and some warm drink. As to the *propriety* of cabbage for breakfast, I have nothing to say. None of my readers suspect me of being much influenced by Fashion in such a matter.



PUZZLE PICTURE—HOUSE THAT JACK BUILT.

How to Cook Cabbage.

Chop the cabbage head fine, or cut it as small as you can well with a knife. Half of an average head is sufficient for a meal. Put it into a kettle, and pour over it about a pint of *boiling* water. Cover it, and keep it boiling steadily, (not letting it burn dry by too hard boiling), for half an hour. Pour off what water remains—the cabbage itself supplies some water in cooking—and pour in a tea-cupful—or two if you like—of good milk, salting to taste. Let all boil up together, and it is done. If you put in considerable milk, it will be much liked if poured over "white gems" split in two.

BOILED ONIONS WITH MILK OR CREAM GRAVY.—Put the peeled onions in a good deal of boiling water, and keep them boiling steadily for an hour. Pour off the water and turn into the sauce pan (for a dozen onions) nearly a pint of good milk, as creamy as you can afford. Salt to taste. When it boils up, thicken with flour stirred to a smooth paste in water.

BOYS & GIRLS' COLUMNS.

How we Grow!

When I was a "jacket-and-trowserser," the good woman who came and made up my clothes, was always cautioned to "allow for growing." This family of boys and girls has got to be so large, that the Publishers have been obliged to "allow for growing." You need not tell anybody, but I will quietly inform you, that the old folks have been pushed about in a most remarkable manner, to make room for you young folks. The Publishers have given you over one-half more room than you had before; yet in doing this they have not given the older readers any less, but on the contrary, they have more reading matter than ever before. So we are all better off. Father and mother will have more, and you youngsters will have more, and so we sail along in the new year with colors flying. Hurrah for the Publishers! Hurrah for the boys and girls! says THE DOCTOR.

441.—**Puzzle Picture,** and a good one, too, as we think, as it tells us something about the life of that Jack, dear to all boys and girls, who know the story of "The House that Jack Built." There was a "rat that ate the malt that lay in the house that Jack built," and we might think that he was a brewer, were it not that the idea of a farmer is suggested by "The cow with crumpled horn who tossed the dog that worried the cat that killed the rat that ate the malt that lay in the house that Jack built."—Until we saw this picture, we did not know that Jack was a gardener, but he must have been, and a good gardener too, with his close fence, his hotbeds, and his cold-frames. After you have sufficiently admired Jack's garden, perhaps you would like to see the "House that Jack built."—It is there in plain sight, and perhaps after you have once seen it, it will be difficult to help seeing it. It is generally the case with puzzle pictures that they never puzzle but once—but it is fun to see others bother about them.

THE DISCOVERY.

THE PURSUIT.

THE LATEST FROM THE SEAT OF WAR.

Just a Bit of Nonsense.—Young folks like "nonsense pictures," and we have seen old folks

laugh at them. These pictures are what artists call *silhouettes*. May be you would like to know what silhouettes are, and why they are so called. They are generally solid black drawings upon a light ground, and in modern times were first made known by Etienne de Silhouette, who was in 1759 the French Minister of Finance, or what we call in this country the Secretary of the Treasury. But this style of drawing was known in very early times, and long before the Christian Era, vases and other pieces of pottery were ornamented in the most beautiful manner with drawings, made in this way. So after this bit of history, let us look at our nonsense silhouettes, which quite explain themselves. The early bird who found the worm, did not happen to be the cockerel. The progress of the story is well told, but there does not seem an end to it—perhaps you will say that, so far as the worm is concerned, the last picture shows that there are *two ends*.

"Green Boys."

We have seen a lot of city or village boys gather around a boy from the back country, and make fun of him, and talk about his "greenness," because he was not up to all their ways of acting, and very often ways of mischief. And very often the country-boy feels chagrined about it, and goes home quite sad.....Yesterday we were having a chat with some city boys, sons of wealthy parents, and in our conversation the word buckwheat was mentioned. We asked the boys when it was sown, how the plants looked, how they get the buckwheat flour out of it, which makes their nice morning's "flat-jacks"—or "flap-jacks," as some call them. Our country friends would have laughed at the answers. One large boy said they sowed buckwheat in the fall, and cut it the next summer, he believed. Another said, he supposed they sowed it the same as any wheat, and cut it and ground it the same, and he supposed it was only so called, because it was a kind first raised by a Mr. Buck. None of these boys could tell anything about the appearance of the plant or grain—though one thought it looked more like oats than like wheat. (They had all seen oats fed to horses, and seen wheat at the city grist-mill.) Now, were not these boys just as "green" as any country-lad that ever visited the city? The truth is, city boys are fully as "green" about things in the country, as country boys are about things in the city, and the country boys have the advantage of knowing less about mischief. It's all nonsense, for city boys to put on airs, and laugh at country boys, for the latter know a great many useful things which the former do not know, and if one of each class should be left a homeless, friendless orphan, the farmer boy, with his strong frame, his practical skill, and self-reliance, would stand the best chance of taking care of himself. Let the city boy and the country boy each have a mutual respect for what the other knows that he himself does not know—and remember that one is just as "green" as the other, when he gets into the other's territory. By the way, we know of a city boy who is collecting a cabinet of all kinds of grains and seeds, used in agriculture and horticulture, and is studying the habits of the plants. He takes two copies of the *American Agriculturist*, one of which he keeps, and from the other he cuts out all engravings and descriptions of plants, and keeps them with the appropriate seeds. That boy will not be so "green" when he goes out to see his country friends. This is a good example for many other city boys.

Magic and Magicians.

In olden times there were certain persons called *magi*, who professed to have relations with *genii*, and all sorts of supernatural beings, the existence of which very few persons now believe in. Their performances were called magic, and now-a-days those who exhibit very clever and astonishing tricks, call themselves magicians. These tricks

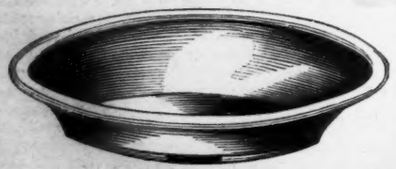


Fig. 1.—MAGIC PLATE.

are sometimes called *Legerdemain*, which is a French word for light of hand, and also sleight of hand. In most of the tricks of these performers of "magic," there is very little "sleight of hand," but they depend for the most part upon the implements used. Some of the performers are exceedingly clever, and at first sight quite bewildering; but if one knows how some of the tricks are done, and watches closely, he can generally find out how even the most mysterious of them are performed. These exhibitors do not pretend that their tricks are anything but *tricks*, and claim no relations with anything but their own ingenuity. There are stores in New York, where the apparatus for performing these tricks is sold, and in-

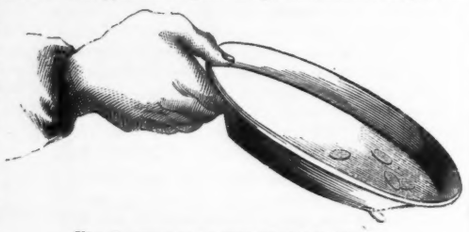


Fig. 2.—THE WAY THE PLATE IS USED.

struction given, from the simplest to the most difficult, and it is astonishing how very simple some of them are, when you know how they are done. Two very simple tricks are here shown, to give you an idea of the way others are done; one is the multiplying balls. A paper-box is shown, into which three small balls are put; the cover is put in its place, the performer shakes the box, and says "horum quorum sunt divorum," or any other nonsense, then he asks one of the company to blow hard upon the box, and at length opens it, and to the surprise of the bystanders the balls will be six instead of three. By a similar process he turns the six back to three again. Another of these tricks is the magic plate, which appears to be only a tin pie-plate. One of the company is asked for three cents, which are put into the plate; the performer then shakes them about, and perhaps holds the plate over the lamp, saying, "hokey, pokey, winkey, fum," or "hobbelum, gobbelum, sunt, rantobulum," or whatever such jargon he chooses, and then he asks the one who has placed the cents in the plate, to hold out his hand, and instead of three, he receives six or a dozen. These are the simplest possible tricks, and when one learns how they are done, he wonders why he did not see it all before. In the first trick, that of the balls, the box consists of a paste-board ring with two covers. Either

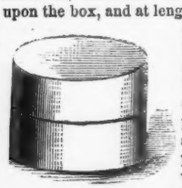
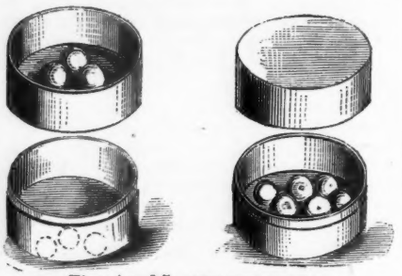


Fig. 3.—BOX.



Figs. 4 and 5.—THE BOX TRICK.

cover may be made to appear as the top, by holding the other tight, so that the ring will remain with that. Upon the inside of one of these covers three balls are glued fast, and in opening the box, this cover is uppermost, and must not be turned to show what is in it—three balls are placed loosely in the box, and after the talk already mentioned, the performer having in his movements turned the box completely over, what was the top, becomes the bottom, and on opening, six balls are seen instead of three, and as three of the balls are loose, it will not be noticed that the three others will not move. So the performer can repeat this as often as he chooses, provided he does not expose the three balls fastened to one of the covers. Fig. 3 shows the box closed, fig. 4 open, with the three balls put in; the others fastened in the other half; fig. 5 shows the balls at the second opening of the box. The money-plate is equally simple; it has a double bottom, and between the two bottoms there is room for the coin, which is put in at the hole shown in fig. 1. When the performer holds out the plate to receive the cents, he covers this opening with his hand, and while going through with his talk, he changes the position of his hand, as in fig. 2, so that when the coin is poured out, that beneath and that above the false bottom will all run out at the same place. Such simple tricks are capable of affording much amusement in a party of young folks, provided the one who shows them is skillful. A bungler should not undertake them. In performing such feats for the entertainment of your friends, always rehearse them, so that they will go off smoothly, and have on hand plenty of small talk, for one of the secrets of success in these tricks, is to occupy the attention of the spectators, and not allow them to examine your movements too closely. After you have created great wonderment in a party, you can make still more amusement, by showing them how readily they were deceived.

Aunt Sue's Puzzle-Box.

WHAT CITIES AND RIVERS MEAN, TRANSPOSED:

1. A planet. 2. A tree. 3. A vessel. 4. An animal. 5. A garment. 6. A hard substance. HERBERT J. K.

ANAGRAMS OF SCOTT'S CHARACTERS.

1. Dine sane Jane.
2. Tall Tom Idryo.
3. Hob O'Dorin.
4. Fruit rack.
5. Lean elf.
6. Fie! Gilbert B. Tibb.
7. Mr. Bosy—a tar.
8. Mr. George H. Clen.
9. Thadey Hewlit.
10. Drive on, Anna.

ELLEN M.

CHARADE.

When Rome was in her palmiest day,
And held an universal sway,
My first was not.
And now in this degenerate age,
—So say the learned and the sage,—
My next is not.
And yet 'tis often found in mint,
(I don't refer to juleps,)
It comes from buds of roses too;
My whole more oft from tulips. O. U. I.

SQUARE WORDS.

1.—1. A mineral. 2. A tree. 3. Erudition. 4. To produce. MOCKING-BIRD.

2.—1. Expanded. 5. Colorless. 3. A girl's name. 4. Approximate. RALLY B. P.

CROSS WORD.

My first is in silver but not in gold,
My next is in hoary but not in old,
My third is in light but not in dark,
My fourth is in Matthew but not in Mark,
My fifth is in pull but not in jerk,
My sixth is in smile but not in smirk,
My seventh is in staff but not in crook,
My eight is in volume but not in book,
My ninth is in warrior but not in fame,
In my whole you will find the composer's name.

NUMERICAL ENIGMAS.

1. I am composed of 13 letters:
My 1, 11, 12, 2, it is sad to need.
My 10, 3, 8, 9, is a wonderful instrument.
My 6, 13, 7, 4, 5, is needed to give it motion.
My whole is the name of a periodical. JOHN C. C.

(A very easy one.)

2. I am composed of 11 letters:
My 7, 6, 9, 6, 8, 6, 11, is a cape on the coast of Europe.
My 11, 6, 1, 5, 3, 6, is a city in one of the Eastern States.
My 8, 10, is a river in Europe.
My 4, 10, 7, is a mountain in the United States.
My 2, 7, 6, 5, 6, is a Western city.
My whole is a city in England. VAU.

PI.

Lapin vilgin nad ghih gnikhint ear on omer,
Het meyloh yeatub fo eth dogo dol sauce
Si noge: rou capee uro luffare cinnecone,
Dan rupe glinorle hintbegar shoelohud slaw.
WORDSWORTH, Sep. 1802.

DIAMOND PUZZLE.

1. Part of an apple. 2. A conjunction. 3. A Poet. 4. A vegetable. 5. A builder. 6. A pronoun. 7. One third of ten.

The central letters, perpendicular and horizontal, form a vegetable. YANKEE DOODLE.

ALPHABETICAL ARITHMETIC.

OEY)ANTYEAK(ODDET
ANO

OYEA
ODUE

YUNK
YYKT

OOO

NIP.

CONCEALED RIVERS.

1. Oh! Tom, Mabel kicked poor Carlo.
2. The poor dog ran down into the cellar.
3. I don't want to go! O! send Jim, won't you?
4. What is the matter? don't you feel well?
5. The cow hit Effie with her tail.
6. Mother, O! guess who is coming to tea.
7. Either Dan or Thomas Smith.
8. No, it is Dick Marshall.
9. Let us have some ale on the table.
10. There are dozens of bottles in the closet.
11. Dick and I said we would agree never to drink another drop of spirits.

RIDDLE.

I have no feet, and yet I'm ever going
From early dawn till setting of the sun,
And when the stars with silvery light are glowing,
My onward course as steadily I run.
My pallid face, devoid of all expression,
Yet bears full many a mark of "Father Time,"
My voice, my richest, best possession,
Ofttimes rings out with merry, cheerful chime.
The busy housewife with her cares perplexing,
Looks on me as a counsellor and friend;
For when the days are hurrying and vexing,
Efficient aid my regulations lend.
I haste the traveller to the intended station,
Before the headlong train comes steaming in,
Ah! many a son and daughter of creation,
Through me are saved the sad "It might have been."
Mine is a life of busy, ceaseless motion,
No recompense for services I claim.
In this fair land—in climes beyond the ocean
I'm known; dear children, can you guess my name?
MRS. LIZZIE MOORE.

ELLIPSES.

(Fill the following blanks with words pronounced alike, but spelled differently).

1. We —— were —— busy —— go.
2. The —— has not very long ——.
3. The —— had a silver —— in her hand.
4. He —— a hole in the ——.
5. I —— him with a —— for some ——.
6. They were staying —— the ——.
7. I would as —— eat a ——.
8. The young —— —— a grand display.
9. When you —— the —— do it —— for the ——.

AMBROSE M. S.

ANSWERS TO PUZZLES IN THE DECEMBER NUMBER.

DOUBLE ACROSTIC.—B- el -L / O- hi -O / S- a -W / T -hre-E / O- w -L / N- el -L

DIAMOND PUZZLE.

```
    A
   ACE
  BROWN
 TAUNTON
ACONCAGUA
 SCRATCH
  TAGUS
   SUM
    A
```

CROSS WORD.—Valentine.

SQUARE WORD.—D A C E / A N A M / C A L M / E M M A

ALPHABETICAL ARITHMETIC. — 638)1749052(2741. (*Key:* Black Horse.

PI.—"Take the spade of perseverance,
Dig the field of progress wide,
Every stubborn weed of faction
Worry out and cast aside."

ANAGRAMS.—1. Accommodates. 2. Establishment. 3. Indispensable. 4. Reinstated. 5. Persistence. 6. Appropriations. 7. Disproportionate. 8. Transformation. 9. Fallacious. 10. Embarrassment.

ARITHMOREMS.—1. Vivid. 2. Seed. 3. Pass. 4. Ibex. 5. Yawl. 6. Fee. 7. Ollo. 8. Rood. 9. Onyx. 10. Hoax.

NUMERICAL ENIGMA.—Robinson Crusoe.

Thanks for letters, puzzles, etc., to Joe, Denver, C. T., Clio, H. F. S., Edna M. L., M. J. F., Charlie S., and C. D. D.

Send communications for the Puzzle Box to Aunt Sue, Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Doctor's Talks.—About Blowing Soap-Bubbles.

The boys were quite convinced that they did not know *all* about soap-bubbles, and were ready to learn more. Supposing this would be the case, I arranged a little surprise for them, and had my soap-bubble toy prepared beforehand. I had them blow some fine large bubbles, as large as possible, and they did not fail to notice the beautiful colors they showed, but soon after they became large enough, and of course thin enough to display their tints, they would burst. I then took my bubble-toy and blew. A prolonged O-h-h! from all hands showed, that it was the most beautiful bubble they had ever seen. Even when quite small it was a perfect kaleidoscope of changing colors; and when I shook the bubble free, and used my arm for a battle-door, and the bubble for a shuttle-cock, and bounced it all around the room, you may be sure they were delighted. Then I made another bubble, and set it upon the mouth of a small vial, and put it upon the mantle-shelf as an ornament, and never was work of art so beautifully colored, as this rainbow-tinted bubble. It stood for several minutes, and would have remained longer, had it not been moved for a closer look at it. "Uncle,"

BUBBLE ON A VIAL.

said Wat, "you have not got soap and water to make those bubbles with."—"O yes, I have," was the reply.—"Then there is something else with it, for just common suds would never make any such bubbles as those," said Art., and the boy was right. So of course I had to tell them all about it. In the first place, you must have the very nicest kind of soap, white Castile is the best; this is shaved up, and put into a bottle of rain-water, about two ounces of soap in a pint of water; the water is allowed to dissolve as much soap as it will, and the clear liquid poured off from the soap, which settles to the bottom. Then I take two parts of this liquid, and one part of *glycerine*, and mix, and this mixture I have in the toy. "But Uncle, could we not blow just such bubbles with our pipes, if we had this mixture?" asked Walter.—"Of course, you can, and I have prepared enough for all of you."—"But what *is* this glycerine?" asked Arthur.—"I was afraid you would ask me that," I replied.—"Afraid? Why?"—"Because it is rather difficult to answer, so that boys and girls will understand it, but I can tell you something about it. You will remember that I told you, [see article in January,] that in making soap, a *part* of the fat, oleic acid, united with soda, to make the substance we know as soap, the *other* part of the fat, which I did not then say anything about, is glycerine, and when the soda joins the oleic acid to form soap, the glycerine is left by itself, or 'set free,' as the chemists say. Whenever soap is made from fat, much glycerine is produced, though this is not the way in which glycerine is made for sale, as in soap-making it is so mixed with impurities, that it goes to waste."—

"Then Uncle," said Arthur, "fat is oleic-acid and glycerine."—"Exactly, that statement is near enough to the fact for our purpose. Now here is some glycerine, you see how clear, and like the finest honey, it is."—"It looks good enough to eat."—"You may taste it."—"How sweet! Almost like honey!"—"That," said I, "is why it is called glycerine, as it is named from the Greek word *glukos*, which means sweet." Of course they thought it very wonderful that fat should contain such a sweet and fine looking syrup-like substance, and one too that would readily mix with water, and I had to tell them that the most remarkable thing about it was its not drying; a surface smeared with glycerine will keep moist day after day, and not dry, and that is one reason why bubbles made with a mixture of this lasted so long, was that the thin film of the bubble did not evaporate so rapidly as when soap and water alone were used. After all had tried the glycerine mixture, and blown the most magnificent bubbles imaginable, they wished to know how I managed to put the bubble on the vial, which is a very easy, and when the bubbles are made with this mixture, a very pretty thing to do; I have heard of bubbles made in this way lasting for several hours, if placed under a glass shade, but I never tried it. To put the bubble upon the vial, you first thoroughly wet the neck and rim of the vial with the liquid, then blow a bubble, and when it is still small, touch it to the mouth of the vial; if the bubble breaks, try again, but if it does not, and with a little care it will not, go on blowing, and when the bubble is large enough, lift your pipe away in a one-sided manner, just as you do when you throw a bubble off from the pipe. A few trials will make it very easy. Walter tried it, and after a few attempts succeeded.—"But," said I, "your bubble is not a handsome one, it is only a little thing, and has no fine colors. You must make it larger if you would see its beauty."—"Larger, indeed," was the reply, "the bubble is done, and I'd like to see any one make it larger."—"Easy enough, give me that bit of broken pipe-stem."—After thoroughly wetting one end of the stem with the liquid, I dexterously pushed it through the wall, or film of the bubble, and increased it to more than twice its former size, to the great astonishment of all the children. Indeed, if one is a little skillful, he can do many curious things with the glycerine and soap bubbles, and as for the chain of bubbles, blown with Mr. Bliss' toy, I have made fifteen, or more if they were small, but the weight soon becomes too great for the last one. "But uncle," one asked, "is not this glycerine very dear?"—"Not so dear as formerly, it is now made on the large scale, and sold at 75 cts. a pound, but in small quantities our village druggists sell it for about 10 cts. an ounce."—"I wish now, uncle," said Walter, who has something of an artist's eye for color, "that you would tell us how these bubbles are so beautifully colored—when you first begin to blow, the film is without color, and soon it breaks into as many beautiful hues as a—a—well, a peacock's tail."—"Can you tell me why a leaf is green and a flower white, yellow, or red?"—"No, except that they are made so."—"Well, then, the bubble is made so," I replied. "No, uncle, that won't do, because the bubble at first has no color, then when you make it larger it will show colors which keep changing and changing the more you blow, and when you get the bubble very large and thin, and expect it to be still handsomer, it seems to lose its color and bursts, now I would like to know why?"—The boy had asked the very question I hoped he would, but he touched a subject upon which the most learned men are not quite agreed, and I could only promise another evening to tell them something about it, at least enough to show that even a soap-bubble will suggest questions that puzzle the men of science. THE DOCTOR.

A Boy Asks Questions.

The boy is named Anson, he lives in Wapello Co., O., and he has some questions that he would like the Doctor to answer. That is right Master Anson, if you, and all the other boys—not to omit the girls—will ask questions about things that puzzle them, we shall have a right lively time of it. Master Anson asks two questions; one about heated air is a very well put query, and when I get through with the bubble talk, I hope to attend to that. If I forget it, ask again. Letters for me should be addressed "The Doctor," 245 Broadway, care Orange Judd Company. Here is our young friend's question just as he puts it: "I have noticed after putting horse hairs in water for some weeks, they would appear to be so many snakes, and would swim around in every direction. I would like to know how this could be, I do not believe that a horse-hair could turn to a snake."—Now this is a very curious case. Our correspondent says he has noticed something, and then says he don't believe what he has seen. I don't think that Anson wrote just what he intended to say. If he did put horse-hairs into water, and they did "appear to be so many snakes," and "swim around," why does he write to me about something his own eyes has seen, and ask how it could be? He, no doubt, meant to say that he has put horse-hairs into a pool, and afterward found something alive that looked like a horse-hair. I will state the facts in the case, and then our friend Anson may perhaps see where he failed to express himself just as he intended. It is a popular belief, because hair-like worms are found in pools and other places where horses drink, that the horse's hairs drop into the water, and there change into snakes. Now this matter is perfectly well understood, in the first place these snakes, so-called, are not snakes at all, but worms, and they no more come from hairs than colts are hatched from pumpkins. The "hair-snakes" or "hair-worms," as they are more properly called, are just as much distinct and independent animals as the horse itself. There is enough about them that is strange, without going to the hair story absurdity. These animals are called by naturalists *Gordius*. Perhaps you have read of Alexander and the Gordian knot, and these were so named from the way they have of making difficult knots of themselves. There are male and females, and the female lays eggs in the water—long strings of them. When the young Gordius is hatched, it is quite unlike the parent, and very minute, being only $^1/_{450}$ of an inch long. Now here comes the strange part. The water-beetles and such insects, being on the look-out for food, swallow an infant Gordius when they get a chance, and that is just what young Gordius wants, for inside the insect it can grow—just as a tape-worm grows in man—and by and by come out a regular "hair-worm," to keep up the story that horse-hairs turns to worms. No, Master Anson, your question about heated air is so well expressed, that I am not willing to believe you intended to say that you have really "noticed" that hairs turn to worms; but if you still think you have, you must tell us more about it. Do not think I am unkindly criticising you, for I would not discourage you from asking more questions, and when you look at your question as it appears in print, you will see that you have said rather more than you intended. Let me hear from you again. THE DOCTOR.

Valentine's Morning.

There is excitement in the household, the post-man has come with his letters, as he usually does, but why on this particular morning, the 14th of February, should all old and young rush to see what the letter carrier has brought, while on every other day in the year there is no such eagerness? It is St. Valentine's morning, and the youngsters, and some not so young, are expecting a valentine. Twenty-five years ago a similar scene might have taken place in almost any city house, and in the country, where there are no letter carriers, the interest would be shown in some other way. Even now, when the custom of sending Valentines is much less common than it was, the business of the Post-office is greatly increased on the 14th of February, and in some parts of the country the day is much more observed than in cities. Still young people of the present time can have little idea of how their parents and grand-parents regarded the day, and it is likely that before many years Valentine's day will be lost sight of altogether. Perhaps you would like to know something about the day and how it was formerly observed. There was once a very good man, who, in the time when people were made to suffer for their religious belief, was beheaded because he thought differently from other people. Then after he was dead, his goodness was remembered, and he was called Saint Valentine. All this happened in Rome, some 1,600 years ago, when they did very strange things. One of the customs of that time, was to put the names of all the girls, or as we should say now, young ladies, in a box, and for the boys or young gentlemen to draw out the names—a sort of social lottery you will see. Well, it was expected that each young man would be very polite and attentive to the young lady whose name he drew, for a whole year, when another drawing took place. As this ceremony was held on the birthday of St. Valentine, or St. Valentine's day, February 14th, the girl was the young man's "Valentine," and the youth was the young ladies' "Valentine." It was a harmless amusement, and was probably one of the few ways young people had in those old old times of having a bit of fun. In later times the custom of choosing Valentines by lot, was revived in France and England, and included married as well as single people, and those who were thus chosen as Valentines, were expected to make costly presents to one another, and sometimes great fun was made, by having a little girl drawn as the Valentine of one old enough to be her grand-father. One very learned man wrote in his diary some 200 years ago, that he was glad that he had that year drawn his own wife as his Valentine, and

he should not be put to a heavy expense for presents. At length the custom changed, and young ladies wrote pretty little verses, and sent them with no other signature than "Your Valentine," to the young men, who, if they were lucky enough to find out the writer, would send a present. Then the letters were ornamented with drawings of hearts, cupids, and all such designs, and this ornamentation increased to gilt and other papers cut in very handsome manner. When this was the work of the young lady who sent it, it was all very pretty and proper, but after a while valentine making became a trade, the pretty verses, and the flowers and cupids were printed, and the handsome ornaments were cut by machinery, to such a length was this carried, that some of the valentines cost $20 or more, and did not show the taste and skill so much as the length of the purse of the sender. At length young men as well as girls sent valentines, and at last very coarse things were made and sold for valentines, with which a low-minded person could convey an insult to another without being known. So, like many another innocent and pleasing thing, the sending of valentines was put to wrong uses, and many good persons thought it would be better to give up the custom, and now comparatively few valentines are sent. It is one of those very old customs that we would not like to see die out, any more than we would that of the visits of St. Nicholas, or Santa Claus as we call him, and if treated in a proper and innocent spirit, is capable of affording a great deal of amusement, and giving pleasure to others. But no right minded boy or girl will ever take advantage of the day, to make sport of the infirmities or in any way wound the feelings of others. Rather than this should be done to one sensitive person, the day had better be as dead as the "saint" whose name it keeps alive. Before ending this valentine talk, already too long, we must tell you of one of the superstitions of the time when they had the valentine drawing in Rome. They thought that on the 14th of February, the birds all met to choose their mates, and it was thought nothing strange if those who were brought together by the lottery, should continue to be valentines through life. The Puritan-fathers had a very different view of the day, for they regarded it as the middle of the long New England winter, and had the couplet,

February fourteenth day,
Half your corn and half your hay.

Not much poetry, nor valentining about that, is there?

VALENTINE'S MORNING—THE POSTMAN'S VISIT.—*Drawn and Engraved for the American Agriculturist.*

WHAT NELLY SAW ON CHRISTMAS MORNING.

Nelly's Christmas Morning.—Of course, Nelly having been a good girl, was not forgotten by Santa Claus; she called him Santa Claus, but of course she knew all the while, it was mother who provided the presents for her and her larger brother, Tom. Nelly had candies, a new comforter, a book, and, of all the things she had wished for, a doll. Tom had several things, but there were the skates, and he did not at first notice anything else, as he was quite as much taken up with his skates, as Nelly was with her doll. At last he saw a little square box, and called to Nelly to see it; he opened the box, and—well, the picture tells the rest of the story.

The Winter Birds.

How dull winter would be, at least to those of us who live in the country, if it were not for the winter birds. All the gayer birds leave us when cold weather comes on, and take wing for a warmer country, but the snow-birds, the tit-mice, or chickadees, the winter wood-pecker, and some others stay in the Northern States all winter. However they may behave the rest of the year, when we see little of them, they keep on quite friendly terms during the cold weather, and often there will be two or three different kinds of these winter birds hopping about. Then how tame they get! They come around the house, and even to the very door-step, in search of crumbs and other food. Right under our chamber-window is the roof of a verandah or porch, and by throwing seeds and other food there, the birds make themselves quite at home, and come regularly for their rations. But that deep snow-storm, which came the Sunday before Christmas, covered up not only the food upon the roof, but all that they might find around the door or elsewhere. The poor little things could find no food, and were in great distress; the chickadees, which look as if they had on their winter-furs, and were quite comfortable, seemed to care less about it than the snow-birds, who perched upon the tree close by, and plainly showed that they were hungry. When the window was opened to give them food, the foolish things were frightened, and flew away. A friend told us of a little contrivance, which we shall try: he takes a long, slender pole with a string, much like a fishing-rod and line, and at the end of the string ties a piece of coarse meat; all the insect-eating birds like meat, and he says it is great fun to see the birds fly about, and peck at the meat so hung up for them. Arranged in this way, the meat will not be covered with snow, and for those birds who prefer other food, a little box of bread-crumbs, cracked grain, or seeds, could be put in place of the meat. It is so pleasant to see the birds about the house that it is worth while to take a little trouble to make them come.

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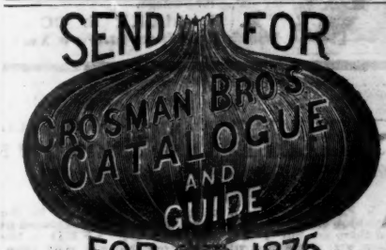

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(See *American Agriculturist,* Jan., 1875, for full description of the above.)

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Explanatory Notes.

N. B.

Read and carefully Note the following Items: (*a*) All subscribers sent by one person count, though from several different Post-offices. But....(*b*) Tell us with each name or list of names sent, that it is for a premium....(*c*) *Send the names as fast as obtained,* that the subscribers may begin to receive the paper at once. You can have any time you wish up to next July, to complete your list....(*d*) Send the exact money with each list of names, so that there may be no confusion of money accounts....(*e*) Old and new subscribers all count in premium clubs, but a portion, at least, should be new names; it is partly to get these that we offer premiums to canvassers....(*f*) Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, but they should be used carefully and economically, and where they will *tell*....(*g*) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at our risk; otherwise it is not.

Table of Premiums.

[In the following table is given the price of each article, and the number of subscribers required to get it *free,* at the regular rates of $1.50 a year, and also at the club rates of $1 a year. **Ten cents extra** must be sent with each subscription for prepayment of postage.]

TABLE of Premiums and Terms For Volume 34—(1875). BEGINNING NOW.

Open to all—No Competition.

No.	Names of Premium Articles.	Price of Premiums	Number of Subscribers required at $1.50	or at $1.
1	*Tea Set (Lucius Hart Man'fact'g Co.)*	$50 00	66	225
2	*Ice Pitcher*..... (do. do. do.)	$16 00	24	80
3	*Casters*.....(do. do. do.)	$ 9 00	17	54
4	*Cake Basket*.....(do. do. do.)	$12 00	19	65
5	*Revolving Butter Cooler* (do. do.)	$ 8 00	16	52
6	*One Dozen Teaspoons* (do. do.)	$ 6 00	15	45
7	*One Dozen Tablespoons* (do. do.)	$12 00	19	65
8	*One Dozen Table Forks* (do. do.)	$12 00	19	65
9	*Child's Cup* (do. do.)	$ 2 75	7	27
10	*Child's Knife, Fork & Spoon* (do.)	$ 5 00	12	37
11	*Moore's Floral Set (Moore Man'f'g Co)*	$ 1 00	3	....
12	*Gold Pen, Sil. Case (Geo. F. Hawkes.)*	$ 3 25	8	30
13	*Gold Pen and Silver Case* (do. do.)	$ 5 00	12	37
14	*Gold Pen, Handle gold-tipped* (do. do.)	$ 6 00	15	45
15	*Ladies' Gold Pen & Rubber Case* (do.)	$ 6 00	15	45
16	*Paragon Pat. Revolving Pencil* (do.)	$ 1 50	4	....
17	*Paragon Pat. Revolving Pencil* (do.)	$ 3 00	8	30
18	*Payson's Indelible Ink—Pen, etc.*.....	75	3	....
19	*Child's Carriage*.....(*C. W. F. Dare*)	$20 00	30	102
20	*Child's Self-operating Swing* (do. do.)	$ 4 00	9	32
21	*Doll's Cottage Chamber Set* (do. do.)	$ 5 00	12	37
22	*Crandall's Building Blocks*.....	$ 2 00	5	20
23	*Crandall's Masquerade Blocks*.....	$ 1 00	3	....
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25	*Pocket Tool Holder (Miller's Falls Co.)*	$ 1 00	3	....
26	*Bracket Saw* (do. do.)	$ 1 25	4	....
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29	*Excelsior Pocket Microscope (Vulcanite Optical Instrument Co.)*..	$ 2 75	7	27
30	*Two, "Pocket Soap-Bubble Toy" (Bliss)*	$ 1 00	3	....
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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 47.

How a Student Became a Gardener.—One of our associates out West on a business tour, writes home the following: Not many years ago a young man studying law in Michigan, fell into ill-health. Having come across Henderson's "Gardening for Profit," he became greatly interested in the subject. Previous to that time he knew so little about plants, that he could hardly tell the difference between a turnip and a carrot. Determined to improve his health by out-door labor, he procured and studied back volumes of the *American Agriculturist,* and commenced work on a dozen town lots, then owned by him. From the start success rewarded his efforts. He soon removed West beyond the lakes, where he grows vegetable and flower seeds on a large scale. To-day he is a picture of ruddy health, and though no more than 40 years of age, he ranks among the foremost seedsmen of that region. A famous dealer at the East has sought him out, and made large purchases of him the past season, among the rest, paying $60 gold for 6 ounces, a handful, of choice seed of his raising.

Going West.—D. B. Miller, "McMitchels." (Where?) It is impossible to reply by mail to a query dated as above, with neither County or State. Many such letters come to us, the writers of which probably feel inclined to accuse us of neglect, because they receive no reply, when the fault is their own, as in this case. Of the two localities mentioned in your letter, we should choose that around Hutchinson, in Reno Co., Kansas, on account of the abundance of water; the Arkansas river and Cow Creek flowing through the County, and also because there is no liquor saloon licensed in Reno county, which tends greatly to elevate the character of society in that neighborhood.

The Estimates of the Cotton Crop.—"B. B.," Ediston, S. C. That the estimates of the cotton crop, made by the Agricultural Department of Washington, have for several late years, excepting in 1871, fallen nearly 15 per cent below the actual crop, is probably due to the fact that the detailed estimates are originally made by planters or other correspondents of the Department, whose interests cause them to lean toward low estimates rather than high ones.

Foreign Trade in Butter.—A package of butter was recently received in New York, from Bolivia, in South America, which was originally shipped eighteen months ago, from Denmark to London, and thence to South America. It was packed in a tin case, and after its long voyages, when opened was in excellent condition, and the case perfectly free from rust. This foreign trade is now ready to be secured by our dairymen, if they will only have the enterprise to pack their butter in the manner desired by the South American consumers.

Wisconsin State Ag'l. Convention.—Had the "powers" sent us notice a few days earlier, we should have been glad to call attention to this Gathering, called for Jan. 27th to 29th. We cheerfully publish such notices, but they must always be on hand before the middle of the month preceding that in which they are held. This one presented a programme of most attractive subjects, treated by capable men.

American Vines for France.—Since the destruction of the French vineyards by *phylloxera,* the vineyardists there are giving much attention to American vines. One of the great grape firm of Bush & Son & Meissner, Bushberg, Mo., in a private note to the Editor, states that their French trade is becoming important; they have already made several shipments, and will forward a car-load of plants and cuttings this month.

Where the Drugs come from.—The book that tells us all this, not by one old story patched on to another, and copied over and over, but by authority, and with originality and freshness, is the *Pharmacographia, a History of the principal Drugs of Vegetable Origin,* by Dr. Flückiger, a Professor in the new University of Strassburg, and Mr. Daniel Hanbury, of London, one of a family of fame in the druggist line, and who has made drugs for a long while a scientific study. The volume is an 8vo. of 700 pages, and is published by MacMillan & Co., of Astor Place, New York, and of London. It is not a medical botany; it is the

drug that is described rather than the plant that yields it; but the right name of the plant is given, and sufficient references to fuller botanical information. Nor is it a Materia Medica in the modern sense, for the medicinal uses and applications, and the diseases they are thought to cure, are only slightly mentioned. Of course it gives none of the details of a pharmacopœia or dispensatory. But its pages are filled with authentic and reliable matter relating to the Botanical Origin, History, Formation, mode of collection, Characters and Properties, Chemical Composition, and Commercial Statistics of all the principal vegetable substances employed in medicine, or otherwise known as drugs.—Of *Sassafras*, under the head of "Production and Commerce," it is said: "Baltimore is the chief mart of sassafras root, bark, and oil, which are brought thither from within a circuit of 300 miles. The roots are extracted from the ground by the help of levers, partly barked, and partly sent untouched to the market, or are cut into chips for distillation on the spot. Of the bark as much as 100,000 pounds were received in Baltimore in 1866. The quantity of oil annually produced previous to the war is estimated at 15,000 to 20,000 lbs. There are isolated small distillers in Pennsylvania and West New Jersey, who are allowed by the owners of a 'sassafras wilderness' to remove from the ground the roots and stumps without charge."

John Ellis not an American Botanist.—The American Garden, reproducing the Gardeners' Chronicle's striking but rather fanciful page-full of figures of Insectivorous Plants, recapitulates the leading points in regard to their action, and the history of what is known about them, including the recent contribution by Mrs. Treat of New Jersey. Ellis, with whom the literature of the subject begins (about 1770), is said to be "an American botanist and collector." Now John Ellis was a London merchant, born within the sound of Bow-bells, probably was never in America, and, although a naturalist, can hardly be ranked as a botanist. Indeed, he was mainly famous in taking the corals out of the hands of the botanists, by showing that they belonged to the animal kingdom. He even took more than belonged to him; for some of his *Corallines* are calcareous sea-weeds and have been reclaimed by the botanists.

"Cleanliness is next to Godliness," the Gardeners' Chronicle (of Dec. 5) tells us is "a New Testament statement." It is "as true as Gospel," no doubt; and it may rank with another doctrinal statement, of which a good woman, on being told it was not in the Bible, naively remarked, that she "always thought it was a great omission."

Seymour's Broadcast Sower.—"L. A. H.," Charlottesville, Va. The Seymour broadcast sower can be procured of R. H. Allen & Co., 189 Water St., N. Y. A number have used this machine for sowing grass, clover, fine fertilizers, plaster, and all the small grains broadcast with great satisfaction. On rough rooty or stony land, it may be used where a drill can not.

Effect of Pumpkin Seed.—"E. M. S.," Warner Co., O. Pumpkin and squash seeds are said to have a diuretic effect, and this necessarily affects injuriously the secretion of milk. Therefore, when pumpkins are fed to cows, it is safe, at least, to remove the seeds.

Mechanical Draftsmen.—"J. P. B.," Allentown, Pa. The best place to learn mechanical drawing, is in a mechanic's shop or in a mechanical engineer's office. It can not be learned from books, any more than the art of photography or of oil painting.

What our Hotel Bills pay for.—A Reporter of the Tribune has recently been looking into the items of consumption at the N. Y. City Hotels, and makes some striking estimates. He selects 15 out of the 108 principal hotels, and in the 15 finds 4,662 rooms, which will accommodate 6,030 persons, and that in an emergency, these hotels can put up beds for 7,640 persons; that in the course of a year these 15 hotels are visited by nearly a million and a half transient persons, or 1½ times as many as the entire resident population of the city; that these persons expend at least $10 each, or $15,000,000 here, aside from mercantile purchases; that these hotels keep 1,456 female servants, and 1,479 male servants—total 2,935. Further, that these 15 hotels consume annually, 2,889,200 lbs. of Fresh Meat; 461,520 lbs. of Salt Meat; 500,300 lbs. of Fish; 15,000,000 Oysters; 4,704,960 Eggs; 1,274,000 lbs. of Poultry; 275,080 head of Game; 35,620 lbs. of Tea; 145,340 lbs. of Coffee; 686,920 lbs. of Sugar; 461,500 lbs. of Butter; 1,421,160 quarts of Milk; 168,480 quarts of Cream; 91,000 lbs. of dried Fruit; 61,880 gallons of canned Fruits, Jellies, etc.; 1,268,800 lbs. of Soap; 60,000,000 cubic feet of Gas; 22,464 tons of Coal. The pieces of linen washed are estimated at 19,022,000, and the pounds of garbage at 11,000,000. These hotels range in number of rooms thus: Grand Central 630, Fifth Avenue 550, St. Nicholas 500, Windsor 500, Metropolitan 400, Grand Union 350, Stuyvesant 300, New-York 300, Gilsey 267, Hoffman 250, Union Square 142, Brevoort 138, Winchester 120, Ashland 108, Albemarle 107.

What is a Day's Work.—"T. A. P.," Ontario Co., N. Y. We can not say how many hours work constitutes a legal day's work upon a farm. A customary day's work is from breakfast to sundown, but a farm laborer who would object to work extra hours upon emergencies, would not be generally considered as a desirable farm hand. Those who are hired to drive horses, are expected to feed and care for the team mornings and evenings. A month's work is held to include every working day in the month, excluding only Sundays. Legal holidays are generally counted as lost time, but in the case of men hired permanently, employers rarely deduct holidays as lost time. A man hired upon a farm has no right to refuse to do any reasonable labor required of him; ditching or making drains is reasonable labor, which he should not refuse to perform. To refuse to do such work would be sufficient cause for a laborer's discharge without notice.

Hand-Power for Sawing Wood.—"E. M. S.," Warner Co., O. There is nothing gained by substituting the ordinary "buck-saw" for a hand or foot-power in sawing wood. But a very simple sawing-machine may be constructed to saw wood by a one or two-horse-power, or a wind-mill.

Stump Puller.—"T. E. D.," Janesville, Wis. If the advertising columns of the *Agriculturist* were read before an enquiry for any implement is sent, a good deal of trouble might be spared. In this case you would have learned that a stump puller is made by Chamberlain & Sons, of Olean, N. Y., which will no doubt answer your purpose.

Weight of Milk.—"Subscriber," St. Cloud, Minn. Poor milk is heavier than water or rich milk. The specific gravity of milk, is from 1,029 to 1,033, the richer the milk, the lower the gravity. This means that the same quantity or bulk of water, which would weigh 1,000, if of milk would weigh 1,029 to 1,033. This is much more readily understood when the decimal or metric weights are used. Thus, the French litre, the unit of measure, weighs exactly 1,000 grammes when filled with pure water. But the litre of milk weighs according to its richer or poorer quality, 1,029 to 1,033 grammes. As cream is lighter than milk, the more cream there is in the milk, the lighter it is, and vice versa. It is this fact which makes the use of the specific gravity lactometer a very uncertain test of the quality of milk. The proper test is to set the milk in a tube graduated to a hundred parts, and note the percentage of cream.

As to Bargains and Sales.—"T. J. P.," Naples, N. Y. When a sale of stock or produce is made, it is not legally binding upon either party, unless the whole or a portion of the purchase money is paid, or a portion or the whole of the goods is delivered. There must be either payment or delivery, or a written contract to make the bargain binding. If stock or goods are sold, and a deposit is made, and a time fixed for delivery, the seller is not obliged to wait longer than the specified time, and may sell to other parties after that time. A seller is not obliged to deliver goods sold, without payment, unless he has made a written contract, or has taken a note in payment, and not then if he has good reason to fear that he may not be paid for his goods. If farmers could and would buy and sell for cash, it would greatly simplify their business and prevent many disputes.

"Is the Fruit changed by Foreign Pollen?"—"E. Y. T.," a competent observer at Richmond, Ind., gives the following interesting testimony: I once saw a hard shelled almond growing beside a peach-tree, both laden with ripening fruit, and the fruit of both was changed from the ordinary appearance and quality, especially was this change most marked in the sides of the trees adjacent. The almond is almost exactly like the peach in tree, leaf, flower, fruit, and seed; differing mainly in that the flesh of the almond fruit is unfit to eat; when ripe the flesh cracks open, and allows the nut, which is the only edible part, to drop out. In the case under consideration, the fruit of the peach tree, especially on the side next the almond, cracked open like the almond, and the quality of the fruit changed from a very good peach into a bitter one, with one side cracked open like an almond, exposing the stone, while on the almond-tree adjoining the peach, the fruit was not so much cracked open as usual, and the size and texture of the fleshy covering of the nut, was more or less changed. Other peach trees growing near, were not mixed with almonds, and the owner of the orchard said that only this one peach tree bloomed at the same time as the almond. A friend of mine, a very careful observer, says he *knows* from many years' observation, that if two varieties of Irish potatoes are planted adjoining, *if they bloom profusely at the same time*, many of the potatoes produced, will be well marked crosses, showing that the change produced in the seed-ball, through the action of the pollen, is also transmitted through the stems to the tubers.—[Will the gentleman here referred to kindly inform us which varieties were the subjects of his observation.—ED.]

Catarrh in Fowls.—"C. W. R.," East Taunton, Mass. Catarrh or roup in fowls, is best treated by injecting a solution of carbonate of potash into the nostrils, and afterwards a solution of chloride of zinc. The potash solution is made with ½ oz. carbonate of potash (saleratus) in a pint of water; the zinc solution of four grains of the chloride in an ounce of water.

Planting Hill-sides.—"L. A. W.," Pike Co., Pa. In the neighborhood of tanneries, where rough mountain land is to be purchased "for a song," after it has been cleared of timber for the bark, it would certainly pay to plant it with rock-chestnut oak acorns. The bark of this is worth more than that of white oak, and it will not be many years before tanners will be glad to buy the bark and twigs from small wood. These are richer in tannin than the bark of older trees, and an estimate of a yearly value of two dollars per acre for land planted in such a manner, would probably be a reasonable one. If the land can be purchased and planted for $20 an acre, the return would be ten per cent per annum.

Extensive Chicken Raising.—"A Subscriber." It would undoubtedly pay for any person "to raise 2,500 or 3,000 chickens for spring markets," but it is very questionable if any novice can do this. An experienced poultry raiser might probably succeed in keeping 1,200 hens upon 25 acres, and raising many chickens, but it would be only by the utmost care and attention, and such treatment as is learned by experience, and exercised with the greatest skill and tact. We advise no one to go into a large poultry business without these qualifications.

For a Kicking Horse.—"W. W.," Huntingdon, L. I. A horse that has acquired the habit of kicking in his stall, will not usually exercise the habit if kept in a roomy, loose box, or if he does he is nearly always so far from the sides of the box that he can not reach them with his heels.

Angora Fleeces.—"R. J. C.," Lancaster, Pa. Messrs. Coates & Bro., of Philadelphia, will doubtless be able to find a market for Angora fleeces in that city, where we believe the only factories using this material are situated. It is not correct to say Cashmere *or* Angora. These two localities are distant from each other, and the Cashmere goat is distinct from the Angora goat. The Angora goat does not bear the fine downy under-fleece which is so valuable for the manufacture of the Cashmere shawls.

Virginia Hams.—"W. S.," Christiansburg, Va. The method of preparing the famous Virginia hams is as follows. The pork is to be well fattened, and after slaughtering hangs over night to cool. The hams are then smoothly cut and rounded, and the leg taken off below the hock. For each 100 pounds of hams, a pickle is made of 10 lbs. of salt, 2 lbs. of brown sugar, 2 ounces of saltpeter, and 1 ounce of Cayenne pepper, with 4 gallons of water, or sufficient to make brine that will float an egg. The shoulders and middles are generally pickled with the hams; all being neatly trimmed, they are packed closely in a cask, and the above pickle poured over them, to cover all completely. After five or six weeks the hams are taken out and drained, and hung up by the skin of the hock in the smoke-house, in which a very little fire is made, so as to have cool smoke. The smoke is made with corn-cobs or hickory chips. Here they remain, being smoked for a few hours twice a week, until fly-time is near. Before there is danger of flies, each ham is wrapped in clean paper, and put into a tight bag of coarse cotton, leg downward. The mouth of the bag is tied with strong twine, the end of which is made into a loop, and the hams are hung up until wanted. It would be an improvement upon this plan, if the bags were coated with thick lime-wash.

Water Pipes.—"J. L. D.," Martin's Station, Va. A pipe of one inch diameter, will discharge about one quart of water per second, or 900 gallons per hour. If 1,500 feet of pipe is laid from a spring to a house 30 feet lower than the spring, across uneven

ground, no air will collect in the upper bends, unless they are above the level of the spring. In that case the pipe becomes a syphon, and will be liable to all the difficulties usual with syphons. It would be best to lower the elevations, or lay the pipe around them, so as to have no part of the pipe above the level of the spring.

International Grain Exchange.—An international seed and grain market has been established in Hungary, at the city of Buda-Pesth. The plains of Hungary are in the European markets the great grain-producing competitors of our Western prairies, and this effort to attract purchasers proves that the competition to sell grain is becoming active and close. The greatly increased use of agricultural machinery in Europe is already telling in the increased production of wheat, and there are as great efforts making there to reduce the cost of freight to market, as in the United States. It is a serious question for us to consider, how long the foreign demand for our grain should fix its price in our barns, and how long the profits of American farmers can safely depend upon the accidents, which affect foreign crops and foreign demand for our produce. Although wheat and corn are necessaries of life, yet an over-production of them is as unprofitable to a farmer, as an excess of any other article.

Amount of Potash in Wood Ashes.—"C. V. W." Wood ashes contain from 10 to 20 per cent of potash. The quantity varies not only with the species of wood, but also with the manner of burning. Wood, when slowly burned, produces richer ashes than when it is burned rapidly. At least such is the experience of potash burners. According to analyses of ashes of various woods given in Prof. Johnson's "How Crops Grow," the ash of oak contains 10 per cent of potash; of willow and birch 11 per cent; beech, poplar, and white pine 15 per cent; elm 21 per cent, and linden, (basswood), 35 per cent.

Foreign and Domestic Salt.—"A. L. B.," Chautauqua Co., N. Y. As to the safety of using American salt, the Onondaga, N. Y., factory filled salt is without any doubt perfectly safe to use in butter, and it is freer from objectionable impurities, than any other salt in the market. The Ashton salt has 1.43 per cent of sulphate of lime, while the Onondaga "factory filled," has but 0.91 per cent. It is the presence of lime which is most objectionable, and the Ashton salt has about one-half more of this than the Onondaga. Experience is strongly in favor of the American salt. A pail of butter put up by Mr. L. C. Flowers, of Onondaga Co, N. Y., two years and four months ago, was opened recently, and was as sweet and solid as could be desired. There can be no better test than this.

Sowing Machines.—"P. D. H.," Ganssvoort, N. H. There is a broadcast sowing machine, which distributes both seed and dry, fine fertilizers very evenly, made by Seymour & Co., Bloomfield, N. Y. We have used it for sowing plaster, guano, superphosphate, ashes, etc., and with one horse and a driver 10 acres a day may be sown. Any one of the standard grain drills is as good as another upon either sandy or clay soils. The kind of soil makes no difference; if a heavy clay is properly plowed and fitted for the crop, it is as easily sown as a sandy loam.

Wagon-Jack.—"E. D. S.," Wayne Co., N. Y. Your drawing of a wagon-jack is received. It has already been illustrated in the *Agriculturist*.

Peanut Straw.—"C. W. R.," Hickman, Tenn, writes that peanut straw is a very valuable fodder if saved with care. When the crop is harvested, it should be stacked in tall narrow stooks until the nuts are dry, when they are picked off or thrashed, and the straw is housed or safely stacked. About 1,200 pounds per acre is the usual yield. It is greatly productive of milk, and will keep stock in good condition without grain.

Grass and Clover in the South.—"D. O. H.," Jackson Co., Miss. That clover and some of the grasses will succeed in the South, has been proved in several places so widely apart, that the possibility may be considered general. In your own State clover that had been pastured through last winter, was 18 inches high and in blossom in May last. A field of clover in another part of the State, was this year in its fourth year, and still in good and thrifty condition. Timothy is not a success in the South except in the mountains, where we have seen a heavier growth than anywhere else. Orchard grass, red top, and blue grass, grow and thrive in Mississippi, Georgia, Alabama, and South Carolina, where properly sown and cared for, but especial care is needed to resist the dry, hot season, and the temptation to over pasture the grass in the winter. It is useless to try to raise grass upon barren worn out soil where a long dry season has to be contended with.

To Destroy Briars.—"J. R. C.," Athelstone, P. Q. To destroy briars by means of sheep, the pasture must be largely overstocked. A hundred-acre field is too large for such a mode of improvement. Besides, if the briars grow strong, they seriously injure the fleeces of the sheep. We would suggest that the briars be mowed, and the spots where they grow be salted. The sheep will then eat the young sprouts closely, and will stay upon those parts that are salted. But there must be enough sheep to keep the sprouts eaten close. We have succeeded in this way in killing out a quantity of dewberries, upon a field which we did not want to plow; the sheep being fed a small quantity of bran and oats daily, to make up for the poverty of the pasture.

Ram for Early Lambs.—"R.," Pittsgrove. A Cotswold ram, crossed upon native sheep, having some merino blood in them, or upon grade or full-blood merinos, produces the best early market lambs for the farmer's profit. A pure Southdown lamb would doubtless be better eating, but while the highest prices are paid for size and fat, the Cotswold ram would be preferable to a Southdown. We have known a difference of 15 pounds between the weights of Cotswold and Southdown grade lambs of the same age (three months) and keeping, and this will frequently make a difference of $1.50 in the price of the lambs.

Feeding in Confinement, etc.—"W. F. B.," Packerton, Pa. Any animal will fatten, or make flesh faster, when fed upon an equal weight of roots washed and sliced, than when fed upon roots as they are taken from the ground. This is clearly evident, because the weight of earth adhering to the roots newly harvested, is considerable, and there is no nutriment in earth. An animal will also fatten and make flesh faster, when confined in a space sufficient to allow it to move freely, than in a space in which it can make no movement. An animal in a cramped, uneasy position, can not be contented, and would probably lose weight, instead of gaining. Comfort and ease is necessary for a feeding animal. This is not only reasonable, but has been proved by experiment, in which animals, fed in roomy sheds, gained 2 lbs. for each 100 lbs. of turnips eaten, and others in close cribs gained only 1¾ lbs. on the same food. If the confinement was so close, as to affect the animal's health, the meat would suffer in quality.

Mill for Grinding Bones.—"W. R. S.," Sussex Co., N. J. We know of but one mill that will grind bones fine enough for a fertilizer, and that can be used without risk of breaking or wearing out. This is the Bogardus Eccentric Mill. A small mill, which costs $204, may be run with 3 horses, and will grind 19 tons of bone a day. The same mill may be used for grinding corn ears into coarse feed for stock. For grinding feed a two-horse power would be sufficient.

Care of Stock in the South.—"W. J. E.," Birmingham, Ala. The main trouble with cattle brought to the Southern States from the North, occurs in July and August when fresh succulent feed becomes scarce. The dry fodder eaten becomes packed in the paunch, where it remains undigested, a source of irritation and disease. This is the cause of what is known as "murrain," which is a blood disease produced by defective nutrition and irritation of the digestive organs. Cattle should be taken South while young, and in the winter season. The first year they should be sheltered from extreme heat, provided with pure water frequently, and with succulent green food, care being taken not to change the feed suddenly. Salt should be given at least once a week, and at the first appearance of costiveness, a dose of epsom salts should be given, or an injection of soap suds until the bowels are moved naturally.

Barley for Horses.—"J. C. G.," Fairfield, Me. Barley is a very safe and nutritious feed for horses. The cavalry horses in nearly every European country are fed with barley, and no other grain, and until recently when our corn has been largely used in England for horse feed, barley was there the staple grain for horse, as well as for poultry feed. There is less husk in barley, in proportion to the kernel, than in oats. There is no more danger in feeding barley than other grains, and less than in feeding corn. We believe this grain is too much neglected in our agriculture, but the excuse probably consists in the better cultivation needed for this crop, than for oats.

Keeping Sheep on Shares.—"A Reader." The usual arrangement made when sheep are taken on shares, is to divide the wool and the increase, which means that all the losses are borne by the person who takes care of the flock. He returns at the end of the time, an equal number to that which he received, and half the lambs which have been raised, with half the wool yearly. It is thus that the best efforts of the shepherd in caring for the sheep, are secured; else there is no safeguard against neglect and bad management.

Good Yield of Potatoes.—"C. H.," Escanaba, Mich., writes that he planted 3½ bushels of Early Rose potatoes, on June, 11th, and dug the produce in October, which was 111 bushels. (E. H. must try again. This yield has frequently been doubled in northern Michigan, and not far from Escanaba).

Varieties of Asparagus.—"B. F. M.," N. J. This matter has been discussed in former years, and we do not see how any one who has compared one year old plants of the "Colossal," with those of the common varieties of the same age, can doubt that there are differences sufficient to make one preferable to the other. It is held by some that the plant being dioecious, *i. e.*, with staminate and pistillate flowers on separate plants, it is impossible to establish a variety that will come true from seed. This same objection would apply to spinach, of which there are several varieties which come true to their character.

Sheep Raising in the West.—"A. O. B.," Derby, Vt. Probably the Arkansas Valley, in South-west Kansas, is one of the best places for sheep raising. It has the advantages of plentiful water, good pasture, dry soil, moderate winters, nearness to markets, and cheap land for a homestead, with good and extensive back range. It is also free from competition with the cattle men, which has been found troublesome in parts of Colorado, New Mexico, and Texas.

Poultry for Texas.—C. B. Prior, De Witt Co., Tex. The breed of fowls, which combines the qualities of hardiness, productiveness, and size, in the greatest degree, is probably the light Brahma. There would be little difficulty in making underground shelters for the fowls in the mid-day, or low sheds of sod, beneath which they could take shelter.

Mortality amongst Hogs.—We hear of serious losses amongst hogs in the Western States. Unfortunately there is little accurate knowledge amongst the owners as to the nature of the diseases, and none as to the remedies. Thus we are told by some that it is hog cholera, that it is caused by *trichinæ spiralis*, that it is worms, and others do not suggest any opinion. It is impossible for any private individual to make the necessary investigations into the causes or proper treatment of these diseases, which annually cost millions of dollars to our farmers. There is an Agricultural Department at Washington, but this serious matter is not considered there of sufficient importance to attract notice, or to be worthy of an expenditure of a few hundred dollars, for the purpose of gaining some knowledge of it. Why do not the Patrons take hold of this matter, and procure a thorough investigation of the causes and nature of these destructive diseases?

Lime for Canada Thistles.—"J. W. H.," Morris Co., N. J. There is an easier way of killing Canada thistles than to spread enough lime upon the ground to destroy them. That would require several thousand bushels to the acre. It is best to plow the ground lightly when the thistles are coming into blossom, and cultivate the ground very frequently. The next season potatoes or corn should be planted, and these crops grown alternately for three or four years, killing every thistle as it appears above ground, with the hoe.

Profit of Breeding Mules.—"W. W. S.," Tuscumbia, Ala. The profit of breeding mules is at least equal to that of rearing any other farm stock. There is little risk, and if a good jack and extra sized mares are used, large and valuable mules can be produced. The usual expense of raising a mule in Kentucky, is about $70, allowing cost up to weaning $50, and feed for 18 months, $20. The value of a two-year-old is $150, leaving a profit of $80. Southern planters are content to pay Kentucky and Illinois breeders to do this business for them, and expend several times the labor and care in raising cotton to pay for them.

Injury to a Plow.—"C. T. C.," Fort Dodge, Iowa. It will harm a plow but little to leave it in the furrow over night. It is the constant exposure for weeks and months when not in use, that destroys these and other farm implements. All these should be kept well painted, and ordinary use will be slight injury to them. When out of use they should be laid away in a dry tool-house. A well made plow ought to last at least 10 years in prairie soil without much repairs, if properly cared for.

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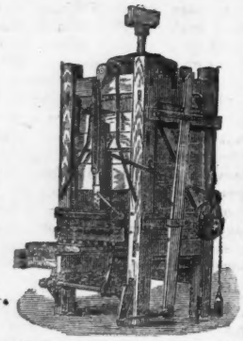

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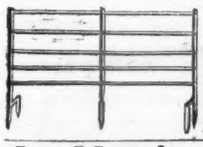

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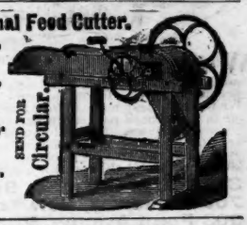

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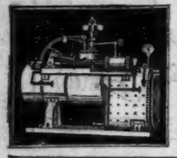

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